Railway Age Gazette

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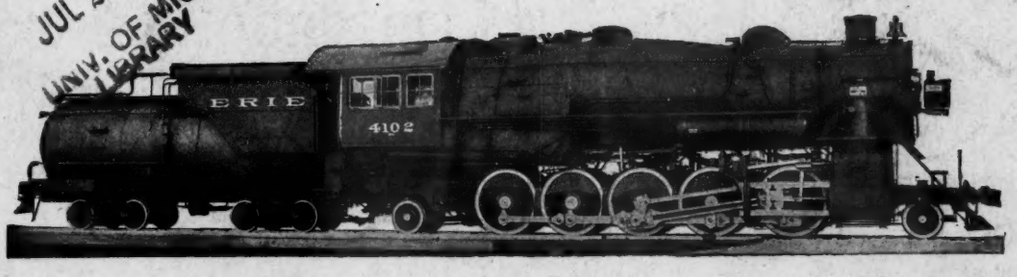

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Railway Age Gazette

Volume 61 July 21, 1916 No. 3

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Nickel Plate Now Independent

The New York Central Railroad has sold its stock—a majority of the total outstanding—of the New York, Chicago & St. Louis to a syndicate of Cleveland bankers. The stock of the "Nickel Plate" was carried on the books of the New York Central at approximately $8,500,000, and this is the amount which the syndicate has agreed to pay for the stock. The "Nickel Plate" runs from Buffalo to the Illinois state line and leases a line from its western terminus to Grand Crossing, Illinois, from which point it has trackage rights over the New York Central into Chicago. It was built parallel to the Lake Shore not because there was any economic need for an additional railroad between Buffalo and Chicago, but to force the Vanderbilts to buy it through the practice of cut-throat competition. The total amount of dividends which the New York Central has received from the "Nickel Plate" has been, roughly, $6,200,000, which is for a period of 23 years, so that if the book value of $8,500,000, at which the stock was carried, represents approximately its net cost, the New York Central has received a little over $260,000 a year, or not much over 3 per cent per annum on its investment. Obviously this was not a profitable investment, except in the negative sense of having prevented disastrous competition. The sale of the stock now indicates that cut-throat competition is no longer a thing to be greatly feared. The reasons for the sale, therefore are easily understood, but there still remains the question of why anyone should want to buy a controlling block of stock which has averaged for the past 23 years only about 3 per cent on the purchase price. Apparently it indicates a belief on the part of the Cleveland capitalists that as an independent and intensively managed road, the "Nickel Plate" can be made to earn considerably more than it did as a part of the New York Central system. This is a reasonable belief. Some of the most conspicuous successes in very recent years in successful and profitable railroad management have been the intensive development of comparatively short lines. At the present time the company is making a fine showing, but the present volume of traffic cannot be expected to continue. The road lacks terminals both at Buffalo and at Chicago.

Average Wage of Railway Employees

The statistics of the Interstate Commerce Commission for the fiscal year ended on June 30, 1915, show that railways operating 224,859 miles of line reported that they employed an average of 1,409,342 persons during the year and paid them in salaries and wages a total of $1,164,844,430. This makes an average per employee of $826.52. This figure is especially interesting because of the fact that it is the largest average compensation figure which ever could be calculated from the statistics of the Interstate Commerce Commission. It is interesting for another reason. Until 1915 the commission gave the number of persons employed by the railways on June 30 of each year and the total compensation paid to them during the year. It has always been contended that the average annual compensation figure arrived at by dividing the number of employees in June into the total compensation paid during the year was misleading. As already indicated, the statistics for 1915 give the average number of men employed throughout the year. The average wages per year for the five years 1910-14, as arrived at by the old method, were as follows: 1910, $673; 1911, $724; 1912, $732; 1913, $756; 1914, $810. The average for 1915, arrived at by using the average number of persons employed during the year, is just two per cent greater than the average for 1914, arrived at by the old method and 9 per cent greater than that for 1913. In view of the loud complaints made by professional statisticians, especially those in the pay of organized labor, regarding the old method of calculation, the similarity of the results obtained by the old and the new methods is somewhat amusing. The old method was not strictly scientific; but it gave approximately correct results; and the average figure arrived at by the new method shows the same thing as those arrived at by the old, viz., that railway employees are, on the average, the best paid classes of workers in the United States.

A Vital Need of the Car Department

A car inspector must not only be thoroughly familiar with the details of car construction and operation, but must understand the application of the rules of interchange, which are growing more and more complicated each year; must know the safety appliance requirements in detail; ofttimes is required to pass upon the loading of long materials, which is regulated by an extensive set of rules, and must understand the regulations for the loading and handling of explosives. The car inspector may also prove a most important factor in reducing the claims for loss and damage to freight. To understand the construction of cars, he must have served for some time in the capacity of a car repairer. The number of inspectors is so large that great difficulty is found in getting a sufficient number of capable men for this purpose and this difficulty is not improved by the low salaries which are paid to these men. A live, modern apprenticeship system for car department employees would pay handsome returns even if it did no more than help satisfactorily to select and train men for this position; on the other hand, changes in car construction and the necessity for greater care in the maintenance and upkeep of cars requires a large force of car repairmen, and these men to be really efficient must possess considerable skill. Car department officers freely admit that some system of developing and training these men should be adopted, and yet most of them hold up their hands and say it is impossible. It is possible, and it is possible to do it right. It requires hard work and painstaking effort, but the results are well worth while. Of the 974 apprentices on the Santa Fe on May 31, 1916, 148 were freight car carpenter apprentices and 25 were car builder and coach carpenter apprentices. What the Santa Fe is doing other roads ought to be able to do.

Lift Platforms at Freight Houses

As the amount of business handled through a less-than-carload freight house increases, additional track capacity can be secured either by increasing the length of the house and the platforms or by adding more tracks. Beyond a certain point, each of these measures has serious limitations. As the house is lengthened the freight trucking distances increase. E. H. Lee ascertained in a study some two years ago that the freight haul increases 27.8 feet for each additional 100 ft. in the length of the house. As additional tracks are added the difficulty of reaching cars on those farthest removed from the house increases rapidly. As a result five or six tracks are generally considered a practical maximum. The common practice in reaching the outside cars is to truck through the doorways of the intervening cars. This requires that the runways be kept open and prevents the stacking of freight in the doorways. In an inbound freight house this practice requires the removal of all freight from the doors before the outside cars can be reached, resulting in an additional handling of a considerable tonnage, with increased liability of damage and a confusion of shipments. The practice of trucking through cars also results in interference between truckers, even under the most careful routing. To avoid this difficulty at some stations the cars have been divided at intervals of perhaps 200 ft. and temporary cross platforms have been constructed which can be removed readily whenever switching is to be done. This is an improvement over the trucking through the cars but the placing and removing of these runways require attention and labor. To simplify this, the Santa Fe has installed platforms at its freight house at Los Angeles which are lifted mechanically as described elsewhere in this issue. This system has obvious merit, and will probably meet with adoption at other stations. A further possibility is the raising of these transfer bridges vertically to clear cars rather than from one end as is done at Los Angeles.

THE MECHANICAL DEPARTMENT AND LOCOMOTIVE DEVELOPMENT

EIGHT or ten years ago there was a widespread belief that the end of a comparatively short period would see the steam locomotive largely replaced by electric power. Today the steam locomotive in America has reached a point of development which even the greatest visionary would not have attempted to predict fifteen years ago. Moreover, the highest point in this development has not yet been reached; there is no question that the steam locomotive will gain much in both sustained power and economy within the next few years.

In introducing refinements in the American locomotive it was natural that designers should follow, more or less closely, lines laid down in European practice. European railway engineers had forced on them the necessity for more refined design long before this was considered necessary in America. Many of the most meritorious examples of European locomotive work are results of the engineering practice of the railways' own mechanical engineering officers. There was a time in the history of American railroads when a similar statement would have been true; allowing for a few brilliant exceptions, such a statement cannot be made today. The present high point which has been attained in the development of the locomotive in this country has been reached mainly because of the energy and resourcefulness of manufacturers of locomotives and locomotive equipment.

It is a sad commentary on the mechanical department, but it is nevertheless true, that there is very little real mechanical engineering being done in the average American railroad drawing office, and this is said without any reflection on the ability of very many of our mechanical department officers. How many railroad executives have encouraged the mechanical department in the production of original work in locomotive and car design? How many have been willing to provide the necessary funds to carry out such work intelligently and effectively, even if they were in favor of it? Very few. The mechanical department of the average American railroad has been treated as a necessary evil for years; it has been permitted a ridiculously inadequate and underpaid staff which has been forced to do its work with inefficient and very frequently antiquated equipment. There has been no provision made, in any but a very few cases, to build up a staff of officers and men for the future and thus encourage the best work of employees from year to year, looking toward a continual improvement and expansion of the road's mechanical practice. The result has been haphazard, hand-to-mouth work.

Fortunately, some few railway men and manufacturers of railway equipment were big enough and broad enough to see the possibilities in the development of the locomotive and it is to them that the railways owe in large measure their present ability to move traffic in such large trainloads and at such low costs. Railway officers in general, and the higher executive officers in particular, may not like the idea of going outside their own organizations for advice and assistance on the improvement of their motive power and its operation, but the manufacturers are today and have been for some years providing a service to American railroads, the value of which is beyond stating in dollars and cents. It has been the manufacturers who have developed and perfected the economy- and capacity-producing features of the present-day American locomotive and it will have to be generally admitted that they have done and still are doing their work exceedingly well.

Much of the recent development might have been carried out by the railways themselves. The executives have themselves to thank that it was not so carried out; but there is still enormous possibility for the railroad mechanical department to improve the steam locomotive in the future, both by closer co-operation with the manufacturers and by closer and

more comprehensive attention to mechanical engineering matters by the roads themselves. It remains with the executive officers as to whether at least part of the credit for future developments shall rest with the mechanical departments of our railways or whether all of it, like the credit for the great majority of the improvements of the past ten years, shall go to the manufacturers.

THE INVESTIGATION OF REGULATION

BOTH houses finally have passed the resolution providing for an investigation by a joint committee of Congress of the entire subject of regulation of railways. This investigation will be, or at least should be, the most important affecting transportation ever conducted in the United States. There can be no doubt as to the question to which it will principally relate. It will undoubtedly be directed chiefly toward ascertaining the desirability of substituting exclusive federal regulation for the present system of both federal and state regulation, or at least of completely subordinating state to federal control.

The more enlightened class of public men and the better informed part of the public already appreciate the fact that the present policy of regulation has many shortcomings, and that most of them grow out of the duplications and conflicts of federal and state control. On the other hand, there are public men who believe that regulation should be made more rather than less drastic; who are aware that state regulation usually has been more drastic than federal; and who are therefore opposed to any interference by the federal government with state regulation. No man in public life has been so uniformly successful in getting on the wrong side of public questions as William J. Bryan. Naturally, therefore, we find him rushing to the defense of state regulation and denouncing in a recent issue of the Commoner as "Another Railroad Plot" the movement for making federal regulation paramount. It must be admitted that a majority of railway managers have become convinced that it is desirable from the standpoint of the transportation companies for federal regulation to be made not only paramount but, if practicable, actually exclusive. Men like Mr. Bryan, Senator La Follette and Clifford Thorne, who act always on the enlightened principle that whatever may be good for the railways must be bad for the public, have no difficulty, therefore, in deciding where they will take their stand. If the railway managers favored exclusive state regulation they would advocate federal regulation. Since the railway managers favor exclusive federal regulation they leap to the defense of "states' rights." But experience has shown, contrary to the political and economic philosophy of the Bryan-LaFollette-Thorne school of statesmen, that what is bad for the railways is not necessarily good for the public, and that what is good for the public is not necessarily bad for the railways. It is certainly true as to the subordination of state to federal control that it is even more to the interest of the public than of the railways that the proposed change should be made.

The reasons why the public suffers from the present system of regulations were eloquently and forcibly pointed out by Frank Trumbull, chairman of the Chesapeake & Ohio, and also chairman of the Railway Executives Advisory Committee, in a recent address to the National Hay Association, which is published elsewhere in this issue of the *Railway Age Gazette*. The duplication of federal and state regulation causes a very large amount of unnecessary expense to the national and state governments—in other words, directly to the public itself. It also causes a large amount of needless expense to the railways. For example, as a result of this duplication the carriers have to make nearly 2,000,000 reports of multifarious kinds to public bodies annually. The cost of making these reports goes into railway operating expenses and ultimately is paid by the public in the form of freight and passenger rates. The policies followed by the federal and state regulating authorities often are grossly inconsistent. For example, some states burden the railways with laws requiring extra men in train crews and fix the maximum passenger fare at two cents a mile. The Interstate Commerce Commission, in its regulation of interstate commerce, does not require extra men in train crews, and allows a rate higher than two cents to be charged. Now, it cannot be reasonable, right or expedient for the Interstate Commerce Commission to regulate the interstate rates and operation of the railways in Ohio, for example, in one way, and for the state authorities of Ohio to regulate state traffic in Ohio in an entirely different way. Either the federal or the state regulation is unreasonable and unfair.

Since federal and state regulation obviously result in unnecessary waste of public money, and since wherever they differ one or the other must be unreasonable and unfair, it necessarily follows that one or the other ought to be either completely subordinated or abolished. Mr. Bryan and those who think as he does defend state regulation and say it ought not to be abolished. Perhaps the joint committee of Congress appointed to make the investigation, and subsequently Congress itself, will agree with Mr. Bryan. In that case let them be consistent. Let the joint committee recommend the complete abolition of federal regulation and Congress pass a law relegating regulation entirely to the states. On the other hand, the joint committee and Congress may differ from Mr. Bryan and those who think as he does, and believe that federal regulation is more desirable than state. If so, let them be consistent and recommend and enact the measures necessary to either subordinate or abolish state regulation. Both the railways and the public would be better off under either system than under both.

Mr. Bryan quotes the plank of the Democratic national platform of 1908, which asserted "the right of Congress to exercise complete control over interstate commerce and the right of each state to exercise like control over commerce within its borders." This, he says, states the correct principle. It will be recalled that Mr. Bryan some years before he wrote this plank, which he now so highly approves, made a speech at Madison Square Garden in New York, in which he advocated government ownership of railways in the United States, and proposed that the federal government should own and manage the main lines and the states the branch lines. Everybody except Mr. Bryan saw at once that this proposal was the product of a mind constitutionally incapable of thinking straight. The principle of regulation which he upholds is equally impracticable. Experience has demonstrated that it is not possible for Congress "to exercise complete control over interstate commerce" and at the same time for "each state to exercise like control over commerce within its borders." Experience has shown and is showing at this moment, that when the states exercise complete control over commerce within their borders they interfere with similar regulation of interstate commerce by the national government, and vice versa. Commerce and transportation within the states and among the states are one and inseparable. Regulation which ignores this fact is based upon unsound principles and is bound to have bad results.

The concentration of regulation in the national government and the increase of federal regulation so that it would cover in a reasonable manner all the phases of rate-making, operation and finance which the public interest may require would benefit the railways, but at the same time it would benefit the public still more. Fortunately, whether the Republican or the Democratic candidate for President is elected the nation will have at its head during the next five years a man whose mind is influenced not by the considerations that appeal to demagogues but by those that appeal to statesmen;

and with such a man at the head of affairs both the railways and the public can rest assured that the question of federal vs. state regulation ultimately will be determined not by the fear that some good may be done to the railways, but by the desire to do the greatest practicable good for the public.

STATE AND PRIVATE RAILWAY DEFICITS IN CANADA

THE subject of government ownership of railways in Canada is one of peculiar interest at this time. The increase in railway mileage in that country within recent years has been greater in proportion than ever took place in any other country, except in the years from 1860 to 1880 in the United States. In 1905 Canada had only 20,487 miles of railway. In 1910 it had 24,731 miles, and in 1915, 35,582 miles. The increase in the 10 years from 1905 to 1915 was 73 per cent, and in the 5 years from 1910 to 1915, 44 per cent. Part of this mileage was built by the government and a larger part by private companies, but the construction of most of the private mileage was subsidized by the government in various ways. There recently has been a crisis in railway affairs in that country. The two private companies which have built the most new mileage, the Grand Trunk Pacific and the Canadian Northern, have failed to earn their fixed charges and have had to appeal to the government to pay the interest it has guaranteed for them. The principal reasons why they have not earned their fixed charges are obvious. These are, that they are new lines in undeveloped territory, that, in respect of railways, the country is temporarily overbuilt; and that these lines were opened for traffic when the nation was involved in a great war. Most of the private mileage of Canada has become able in due time to earn a return on its investment. It is fair to assume that in the course of a few years these new railways, if also left in private hands, will become able to do so.

Nevertheless, the fact that the public has had to pay some of the interest that it guaranteed for them, is being used as an argument for the government taking them over and operating them. The Minister of Finance in discussing the matter in parliament on May 15, said: "This situation must be faced; there must be an end to this annual coming to the government by these two railway companies for relief." Comparison of this statement with the facts regarding the way in which the affairs of the railways now owned by the Canadian government have been handled affords a delicious example of governmental inconsistency. The Intercolonial has been owned and managed by the Dominion since 1867. Never in a single year during that time has it earned both its operating expenses and interest on the investment in it. In other words, in every single year it has had an actual deficit, and has had to draw upon the public treasury at the expense of the taxpayers. The total loss it has inflicted on the taxpayers cannot be exactly stated because the accounts have been so kept that the amount of interest which the government has had to pay on the investment in it cannot be ascertained. But, as shown in an article published in this paper last week, the total loss it has incurred is approximately $250,000,000. In another article published elsewhere in the present issue of the *Railway Age Gazette* the reasons why the government railways have been a financial failure are set forth. Nobody in Canada seems to suggest that the Intercolonial, which government management has had 50 years of opportunity to make a paying property, shall be put on a self-supporting basis. It seems to be taken as a matter of course that it must annually for all time come to the public crib for relief. But when two new railways opened by private companies fail, in a period when conditions are altogether unfavorable, to earn interest which the government has guaranteed, the finance minister announces that "there must be an end to this annual coming to the government by these two railway companies for relief." And yet the results for the government and the taxpayers of paying the deficit of a railway owned by the government are exactly the same as those of paying the deficits of railways owned by private companies.

What remedy does the finance minister propose to apply if these private railways continue to have deficits which must be paid by the public? The temporary relief the government has given "enables these roads," the finance minister says, "to continue until such time as, upon the best advice that we can get, we shall be able to suggest some permanent solution, which I believe will probably involve the taking over by this government of one or more of the existing railway systems, and which, as I stated, may involve later on the nationalization of all the railway systems of Canada." Oh, wise finance minister! The government railways of Canada never up to the present moment have earned even their operating expenses; and yet, according to the finance minister, the proper remedy to apply to the deficits now being incurred by certain private railways is government ownership! If past experience in Canada may be taken as indicating future developments, the government, by adopting the finance minister's remedy, would abolish the temporary deficits of the private railways by the device of converting them into much larger permanent deficits of state railways. What a happy prospect for the Canadian taxpayer!

But let us not be too severe on the minister of finance. Not only he, but most of the people, and most of the public men of Canada spare themselves the inconvenience which would be caused by the feeling that something must be done to remedy the deplorable and costly situation of the government railways by the simple expedient of ignoring that situation or of actually keeping themselves in ignorance about it. On the other hand, they cannot avoid knowing what the situation is with respect to the private railways whose interest the government has guaranteed. If these roads fail to earn their fixed charges the government must pay what it has agreed to, and this requires specific legislation appropriating specific amounts from the public treasury. The contributions from the public treasury in payment of the deficits of the state railways are just as real, but not so unmistakable and specific. The difference between them recalls the story of the diminutive Hebrew commercial traveler who, after his employer had chided him for putting a suit of clothes in his expense account, revised it, but made it amount to the same total as before. His employer expressing satisfaction with the revised edition, but inquiring how it happened to come to just the same total as the original one, the little Hebrew replied, "Vell, the difference is, the suit of clothes is still in there, only you can't see it."

The suggestion that Canada, which has paid a deficit resulting from government ownership of railways in every year since it has owned railways, shall acquire certain private railways in order to avoid paying railway deficits, might be accepted as one of the humors of the silly season were it not so striking an illustration of the grotesque inconsistency and ignorance so often manifested by the officials of democratic government in dealing with business problems.

NEW BOOKS

Corrosion of Iron.—By L. C. Wilson, Bound in cloth. 169 pages, 4¾ in. by 7¼ in. Published by The Engineering Magazine Company, 140 Nassau street, New York. Price $2.

This book is a revision of a series of articles recently published in The Engineering Magazine. The author's purpose has been to assemble and condense the most interesting and important studies and facts connected with the corrosion of iron and its protection therefrom. Considerable practical information is included concerning materials available for the preservation of iron and steel.

Letters to the Editor

STATION FACILITIES

Ann Arbor, Mich.

To the Editor of the Railway Age Gazette:

May I venture a suggestion with respect to the facilities offered in the more pretentious passenger stations of our larger cities?

I have had occasion to visit several of the very fine stations built during the past few years. The interior is finished in expensive stone, the ceiling is decorated with mosaic, the furniture is mahogany, or something equally expensive. So when a mother travels with a live brood of three or four restless youngsters, she and the matron and the janitor are busy keeping these hustling innocents from using the settees as a runway and otherwise defacing the expensive finish. In addition to saving the mother the worry of having others correct her offspring, wouldn't it be as cheap to have a room plainly finished, somewhere adjoining the main waiting room, furnished with a few ordinary rocking chairs, a sand box, a teeter, and a few things like that,—as many department stores do? J. E. Baker.

A SUGGESTION FOR RAILWAY PUBLICITY

Jamestown, Cal.

To the Editor of the Railway Age Gazette:

In the edition of June 16 I note a very readable article on the subject of "Where German Efficiency Falls Down," and what occurred to me particularly was the comparison of charges for passenger and freight service and cost of same.

It occurs to me that is would be a very good idea for the railroads to get a set of moving pictures, showing the various types of passenger and freight cars in the European countries, and the interior of coaches as well as the exterior and along side of these the views of the American coaches. It would also be a good idea to show how these cars look when they are in motion with the crowded coaches and people standing up.

A set of slides showing the comparisons of fares and charges for goods should also be shown and these latter, I would suggest, should be shown on the screen from a different machine so that they could be there permanently, at least for a long enough time for the people to read and digest them.

These pictures could then be sent around to the different moving picture places. The larger railroads could send exhibits to various places individually. I believe that they would work up a very good feeling for the roads in this country. S. H. Smith,

Traffic Manager, Sierra Railway.

RAILWAY EQUIPMENT HIRE

Chicago, Ill.

To the Editor of the Railway Age Gazette:

I quote below from an article published in the Wall Street Journal of April 21. It is evident that the author, like 95 per cent of the public, is not familiar with M. C. B. Rules, which govern all car repairs, when he states:

> "The using road is supposed to repair any damage to the cars, sustained while they are in its custody, or pay the owner for such repairs."

While it should be this way, it is, in fact, quite the contrary. For nearly every repair that is made to a car by the borrowing road, a charge is made to the owner of the car. Not only this, but all wheels, axles, brasses, brake shoes and wearing parts on the car are charged to the owner of the car by the using road, which items are just as much an operating expense as coal, lubricants or any other expenses incurred in operation. In most cases the average cost of maintaining these items runs as high as $7 or $8 per month per car, and if a borrowing road is relieved of this expense, certainly, in their reports this item of operating expense should be credited to car hire balance and charged to the road's operating expense. For the above reason, and the fact that on the road's own cars no interest, depreciation or banker's commissions on the cost of cars are charged to operating expense, many receivers, to make a favorable showing, urge the issuance of receiver's certificates to build cars, when it would have been far cheaper to have hired or used foreign cars instead of incurring obligations which must be taken care of before reorganization is possible. This often works great harm to the stockholders and seriously delays reorganization, particularly in view of the fact that it is a question, under present M. C. B. rules, if it is not cheaper for a road to use foreign cars than to build cars for its own use. An Investor.

THE DIVERSITY OF RAIL SPECIFICATIONS

New York, N. Y.

To the Editor of the Railway Age Gazette:

At the recent American Iron and Steel Institute meeting two representatives of the Steel Corporation mentioned the desirability from a manufacturing standpoint of a common specification for rails. The inference was that the difference in existing specifications is not so great but that a common standard could be easily attained. The statements and intimations suggest the inquiry as to who is responsible for this not having been done long ago.

Disregarding minor differences in chemical composition and sundry details as to manufacture, rail specifications differ now mostly with respect to physical testing and rejection conditions. Thus there are five principal specifications:

1. Manufacturers standard—No tests and no rejections for piping and segregation.
2. A. R. E. A.—Three tests from each heat for piping and segregation and rejection of rails accordingly.
3. A. S. T. M.—Practically the same as the A. R. E. A., but rails found piped and segregated are accepted as "special rails."
4. Nick and break test.—Piece of the top rails of each ingot are nicked and broken and the rail represented rejected if piped or segregated.
5. Pennsylvania—Similar to the A. R. E. A. with special chemical tests required.

It has been stated repeatedly that piping and segregation form the curse of the rail situation, failures attributed to such causes being estimated at from 40 to 60 per cent of the total. No good reason exists for inflicting the railroads with so large a quantity of obviously defective steel, yet for those specifications above which permit of detecting and rejecting unsound rails, viz.: numbers 2, 4 and 5, the manufacturers charge a premium above the stipulated price of rails and evidently take pains to make this enough in the case of the nick and break test specification and the Pennsylvania specification to render them practically prohibitive of general adoption.

A few years ago the railroads yielded to the rail manufacturers' demand for improved balanced sections. This was an item of great expense for the roads to bear as any change of standards must be. Later the railroads were more or less forced to take open hearth steel in lieu of Bessemer at a cost of $2 per ton more, although there is little doubt but that the change was beneficial. Then came a horizontal increased price for rails amounting to $5 per ton, and now the distant cry is for heavier sections with corresponding increased costs. Thus it would seem that continually the railroads bear the burden while the manufacturers sit complacently, controlling in many respects not only the situation, but the policy as well by foisting certain specifications on the railroads against others admittedly superior and more protective. Surely the

manufacturers should be the last to complain of the lack of a common specification. The railroads individually and through the rail committee of the American Railway Engineering Association, have tried, and the responsibility for lack of success is well recognized. A. B. C.

THE LATELY REVISED STANDARD CODE

HAILEYVILLE, Okla.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

With the lately revised standard code we fully expected a very substantial reduction in the length of some of the forms of train orders; but it appears that there is yet ample space for improvement. No one knows this better than the train despatcher, who rehearses the different forms every day. If he asks his superintendent why it is necessary to use such and such forms when one a great deal shorter would answer the purpose, about the only satisfaction he gets is that it is "standard."

Form "E," for wait orders, still provides for the word "until" before each time shown. Such a repetition certainly seems unnecessary. The omission of the word would not have any effect on the understanding of the order.

Form K is lengthened by the addition of three words, when, as a matter of fact, it could be shortened three words (the last three, A to Z). Why is it necessary to put in the words "due to leave"? Simply saying "No. 1 of February 29th is annulled" will convey all the information necessary. Employees will understand it. No. 1's schedule is over a certain piece of track, and that only, and when a man gets an order that No. 1 of such a date is annulled he understands just exactly where No. 1 is annulled. In annulling a schedule part way over the division, it is, of course, necessary to give the details.

Form G could be eliminated. When it is necessary to run an engine extra all the requirements could be embodied in the clearance card handed out at the terminal, with the exception of meeting points with opposing trains. The clearance card is issued on the authority of the despatcher and it would specify that this particular engine would use the track between certain points as an extra train. This procedure would also answer for sections of trains, Form F.

It is good to see the elimination of Example 3, Form G, which did not amount to much, any way. It was a burden to the despatchers to put it out and to the operators to copy it.

There is an agitation now on the part of some to make time-table meeting points between trains of same class positive. It is claimed that this will reduce the number of train orders. But the proposed plan would have its drawbacks as well as its good qualities. However, with a little more censoring there could be a great reduction in the length of the orders now used, thus relieving the despatchers and operators of a good deal of work.

The subject of efficiency tests should receive attention in connection with the despatching rules. How many of the inspectors undertake to find out if the last paragraph of Rule 210 is lived up to? It says, "Enginemen must show train orders to firemen and when practicable must show trainmen. Conductors must show train orders when practicable to trainmen." The phrase "when practicable" pretty nearly nullifies the rule, for it leaves a loop-hole for the conductor to omit the duty unless he feels like it. Nothing is more important than that the conductor know that all members of his crew, at all times, understand the train orders in effect. He is not able at any time to foresee what will happen in the future, and should an accident befall him, and his brakemen not know what was going on, a serious accident might result. I have been told by both brakemen and firemen that they have gone over their entire division without knowing anything about the train orders that had been received on the trip. Firemen and brakemen should be required to report to the superintendent when such a condition exists, and action should be taken with the negligent conductor or engineman. The trainmaster, the traveling engineer and the inspector of train service should make this matter one of the most important, when on the road, and see that the intent of the rule is carried out. I have traveled considerably both by freight and passenger and have never known a time during any trip that it was not practicable for the conductor to show his train orders to the rear brakeman and usually to all the men of the crew.

It would be a good plan, and it was in effect on one line where I worked, for the operator in copying orders to make an additional copy. This was handed to the flagman or rear brakemen. J. L. Coss.

FREIGHT RATES IN GEORGIA

ATLANTA, GA.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Considerably more than two-thirds of the freight transported in Georgia moves under the rates confined to particular commodities, and the question whether the rates are high or low therefore is not illuminated by the comparison that has been made by the Georgia Shippers' Association, which comparison has to do only with the six higher classes. This point should be stated as a supplementary fact in connection with the news item printed, in your issue of July 14, page 82, relative to the hearing which is to be had before the Georgia Railroad Commission beginning August 17. The rates in Georgia, on hundreds of the most important commodities and those moving in the heaviest volume, are lower than in the states north of Georgia, so that as a whole the freight tariffs in Georgia are substantially lower than those in any other southern state.

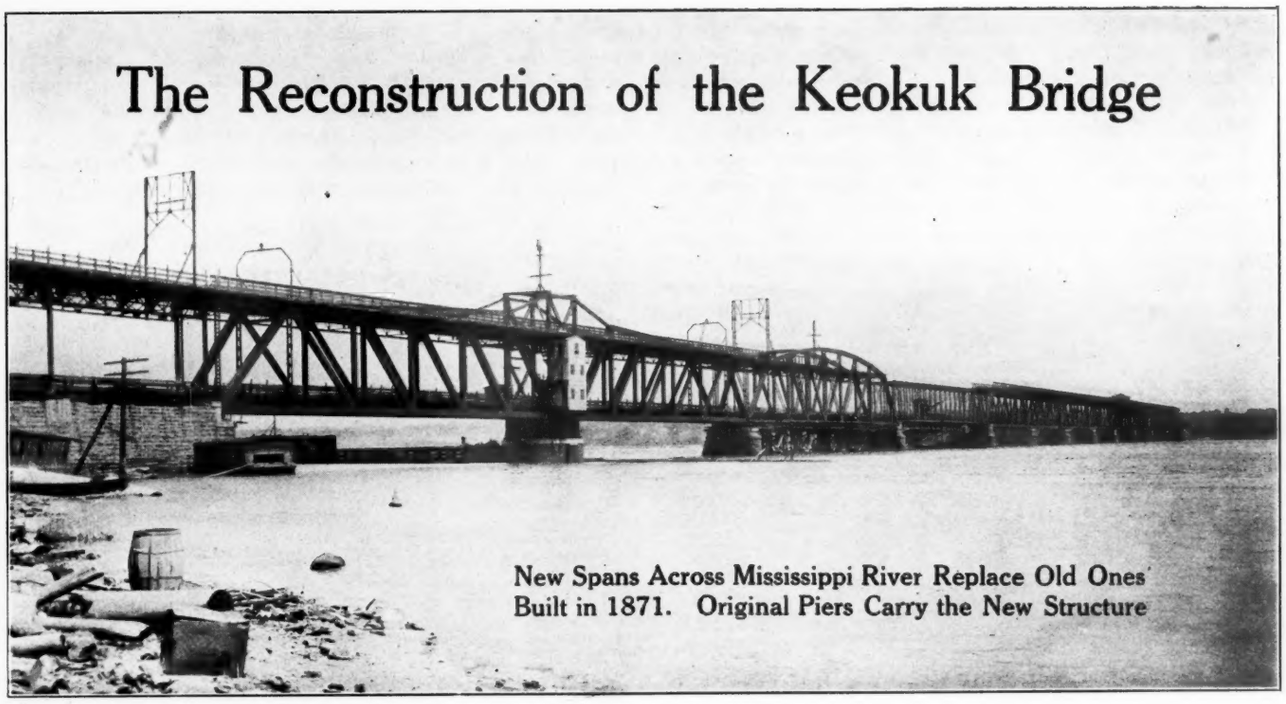
In a general complaint brought by the Atlanta Freight Bureau against the railroads of the state a number of years ago, the commission formally found that the rates promulgated by it were as a whole lower than the rates established by the commissions of other southern states. And the situation in Georgia today is more favorable to the shipper than in past years because of the smaller number of exceptions to the southern classification which are now in effect in the other southern states.

There are other details in which the comparisons between Georgia and other states need explanation. For example, in the other states, the rate for 25 miles applies to any distance over 20 miles, whereas in Georgia the 20-mile rate applies up to 22 miles.

As the result of the efforts of shippers of each state to secure rates lower than the rates paid by shippers of neighboring states, and by interstate shippers, Georgia now has no two systems of rates alike, and, as a consequence, there are numerous discriminations and inequalities, which the railroads are seeking to remove, with the coöperation of the various state regulatory bodies.

It is for the purpose of perfecting a rate adjustment for the entire southeast, which would eliminate such discriminations and discrepancies between intrastate rates in the different states, and between intrastate rates and interstate rates, that the railroads have proposed the readjustment in Georgia which they are now asking the railroad commission to approve. They are submitting similar petitions to the commissions of other southern states. There is no doubt that the readjustment proposed would give a reasonable system of rates under which every shipper would pay like charges for similar services; but such a readjustment cannot be made without increasing rates between points where they are now relatively low, and on commodities which do not pay their just share of the cost of transportation. No fair adjustment can be reached without increasing some rates, for to make an adjustment by reducing every rate to the level of the lowest now in effect in any state in the southeast would bankrupt the carriers. C. G. A.

The Reconstruction of the Keokuk Bridge



New Spans Across Mississippi River Replace Old Ones Built in 1871. Original Piers Carry the New Structure

The Bridge with One Old Span Remaining

THE erection of a new superstructure for the Keokuk and Hamilton bridge over the Mississippi River at Keokuk, Iowa, has just been completed, thereby replacing 11 old spans of cast and wrought iron which had carried rail and highway traffic across the river for more than 45 years. Considerable interest is attached to the details of the old structure and the excellent condition of the material after its long period of service. The bridge carries a miscellaneous traffic consisting of trains of the Keokuk branch of the Wabash, of the Toledo, Peoria & Western, and of an interurban line, as well as highway traffic. The steam road traffic consists of six trains each way daily and the interurban business of a car each way every hour.

The bridge is located about one-half mile south of the dam and power plant of the Mississippi River Power Company, and the Government lock. The bridge, exclusive of approaches, is 2,194 ft. long and consists of 10 fixed spans and a draw span. Commencing at the east abutment there are eight spans varying from 148 to 162 ft. in length, followed by two spans of 254½ ft. with a draw span adjacent to the west abutment, having a total length of 380 ft. The piers and abutments are all founded on rock at a maximum depth of 50 ft. below the base of rail. All of the piers are on a slight skew to the northeast.

Interesting Old Spans

The old structure, built in 1869 and 1870, and placed in service early in 1871, presented many features of interest. The old spans were all Whipple trusses, having parallel chords with the exception of the draw span, the top chords of which were slightly bowed. The end and intermediate posts were made up of Carnegie octagonal columns, the top chords of two I-beams, two channels and a cover plate, the bottom chords of eye-bars, the diagonals and all laterals of loop bars, and the top lateral struts of tubular sections of cast iron. Cast iron joints were provided at the panel points to facilitate the connection of the members. There was almost a total absence of splice plates or other means of affording a positive connection of the compression members, the dead load stresses being relied upon to hold the structure together.

The bridge was a through structure carrying all traffic on one deck, the trusses being placed 21 ft. 6 in. center to center to afford an adequate driveway, with a single railroad track in the center; a sidewalk was carried outside the trusses on either side. The track and driveway floor was carried on timber cross ties, supported on two wooden stringers under each rail, with a jack stringer next to each truss. The floor beams, of unusual design for this day, consisted of two 10-in. channels, trussed by means of eye-bars and cast iron posts. The old structure was built and owned by the Keokuk & Hamilton Bridge Company and was a toll bridge, an arbitrary being imposed on the steam road and interurban traffic. The new bridge is being financed by the same interests and the existing traffic arrangements will continue.

The New Bridge

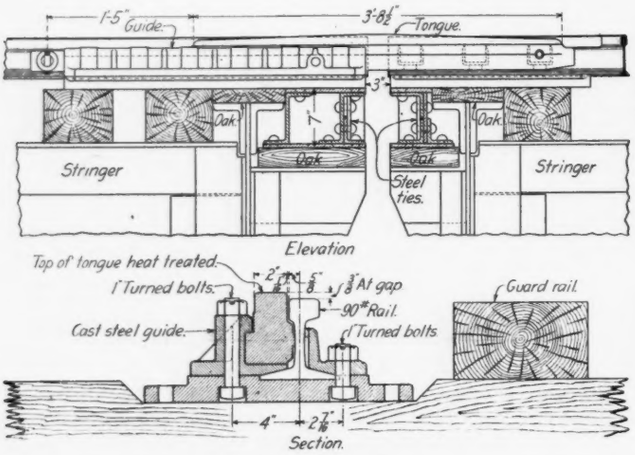
The new superstructure for the eight shorter spans at the east end of the bridge consists of parallel chord riveted Pratt trusses. The two 254½-ft. spans are curved chord Pratt trusses with riveted top chords and eye-bar bottom chords. The swing span consists of two riveted spans, made partially continuous by eye-bar connections to the tower over the pivot pier.

As most of the old substructure was in good condition, the new superstructure has been placed on the old piers, with the exception of one which was partially rebuilt. On account of a difference in the floor depth the old piers have had to be cut down and capped with concrete. The old center pier is hollow, consisting of a circular wall under the drum with a central column under the center casting. In preparing this for the new superstructure the circular wall and central column were covered with a reinforced concrete slab.

An improvement has been obtained in the new structure through the separation of the highway traffic from the rail traffic by placing the former on an upper deck. This has necessitated a viaduct 600 ft. long on the west side of the river and one of 360 ft. on the east side. Owing to the fact that the business district of Keokuk is at a considerable elevation above the railroad tracks, the approach viaduct on the city side is a convenience rather than a detriment. On the east side of the river an incline on a 6 per cent. grade is necessary. The removal of the highway traffic from the

lower deck has permitted a reduction of the distance between trusses to 16 ft. 7 in. for the eight short spans and 20 ft. 6 in. for the others and the use of the ordinary floor beam and stringer floor system, with an open timber deck.

The upper deck has a creosoted wood block roadway for the team traffic and a sidewalk 4 ft. 6 in. wide, cantilevered out on the south side. The floor is carried on wooden stringers having from 7 to 10 ft. spans, supported on 15-in. 42-lb. I-beams, spanning from truss to truss. On the eight short spans the highway deck is carried on top of the top chords of the trusses. In the draw span and the two curved chord spans the deck is carried between the trusses, longitudinal



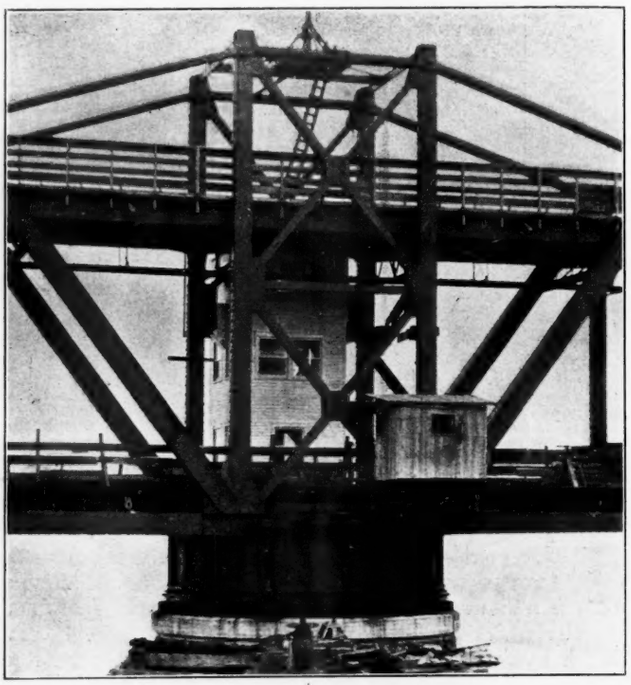
The Rail Lock

girders being provided just inside of each truss to carry the floor system, these girders being supported at each post by connections to the cross frames.

The Swing Span

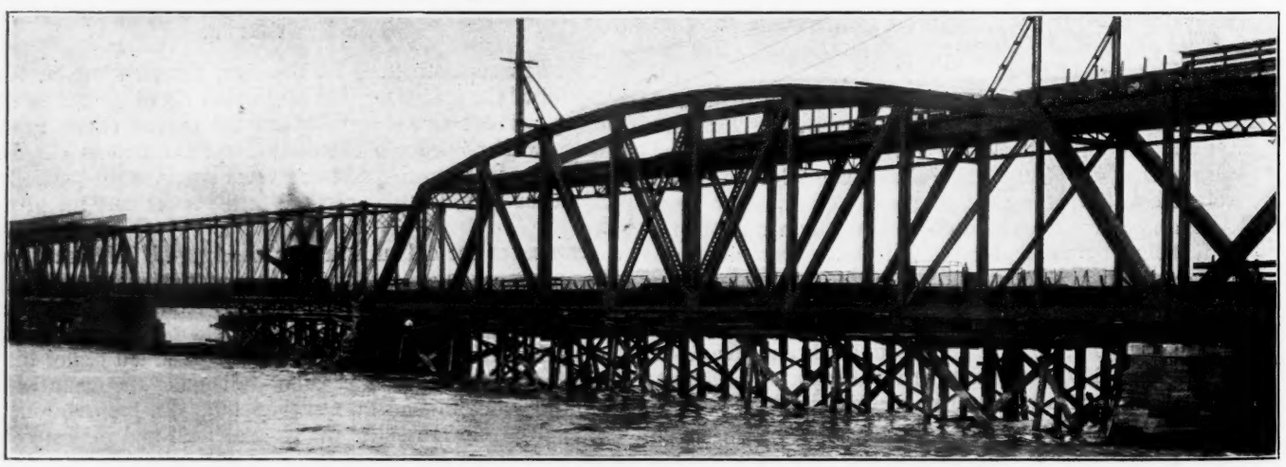
The center of the swing span is of the rim bearing type and has a four-support loading arrangement. The bottom chords of the trusses pass directly over the drum and the concentrations of the end posts and the tower posts are transmitted directly through the bottom chords to the drum, there being no intermediate loading girders. The rollers are secured between two concentric rings; a stiff structural ring on the inside and a lighter flexible ring on the outside, the inside ring being rigidly connected to the center by a system of stiff radial struts. With this arrangement the roller shafts are simply short axles connecting the rollers to the two rings.

Two sources of power are provided for operating the bridge machinery, a 37-hp. motor operating on a 25-cycle, 440-volt circuit, and a 14-hp. 2-cycle Fairbanks-Morse marine gas engine, operating at 800 r. p. m. The machinery is arranged so that it may be operated by either, the single unit performing all functions in either case. The motor will be used ordinarily, the gas engine serving merely as an alternative source of power in case of a failure of the current. The motor is connected to the machinery by a hand-operated clutch which may be thrown into gear either with the swing machinery or the longitudinal shafting connecting to the machinery at each end of the span.



The Pivot Pier and Tower

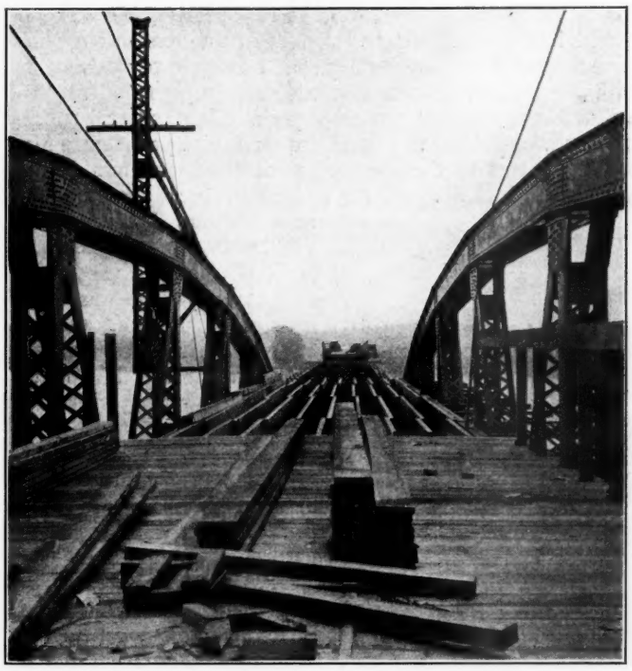
These longitudinal shafts are connected by two clutches to the end lifts and the rail locks, but through a peculiar trip arrangement these clutches are alternately operative and inoperative, thereby automatically effecting the alternate operation of the end lift and the rail lock in the proper sequence. Thus in opening the bridge the end machinery first withdraws the rail lock and with the completion of this function, the clutches are shifted automatically, putting the end lift machinery in motion to lower the end of the bridge. The



Locomotive Crane Placing False Work Under the Last Old Span

operator, observing the completion of this operation on a mechanical indicator, shifts his hand clutch and the bridge commences to swing. When the bridge is being closed all of the operations are reversed.

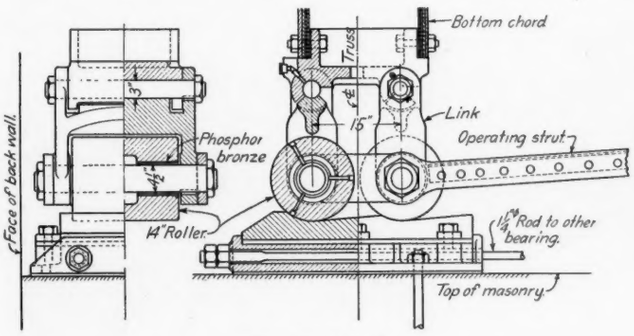
As shown in one of the accompanying drawings the end lifts are of a type which serves to center the bridge automatically and will readily overcome the warping effect resulting from the unequal expansion of the two sides of the structure. The ends of the spans are raised by forcing the



Highway Deck of One of the Two 154½ ft. Spans

toggles from an inclined to a vertical position, the rollers at the lower ends of the toggles being in contact with the inclined bearing surfaces. As the toggles are raised, the rollers roll down the inclines to the lowest position, after which any further movement of the toggles serves to center the ends of the span.

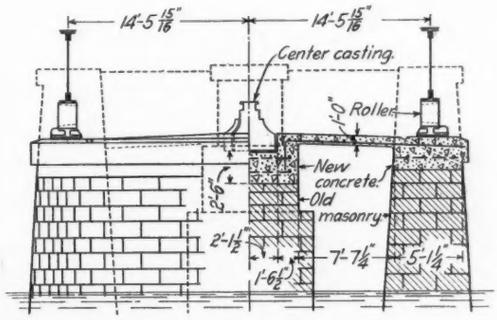
The rail locks are of the sliding tongue type as shown. A



The End Lift

new development in this case is the use of steel ties under the ends of the rails, a measure adopted because of the rapid crushing of wooden ties as a consequence of the impact obtaining when the wheels pass over the gap in the rails. The tongues of the rail locks are of uniform section throughout except for the bevels on the top surface. Instead of being provided with a removable head which may be replaced when worn out, they are cast in a single piece and the top surface is treated by the "Stroh" hardening process. The rail traffic being relatively light and with moderate loading, it is not expected that the wear of the rail locks will be severe.

The operator's house is a three-story frame structure carried outside the truss on the south side of the bridge. The room on the top floor is for the accommodation of a watchman who must close the gates on the highway deck before the bridge is turned. The room on the second floor contains the controllers, switchboard, clutch levers and mechanical indicators for the end lifts and will be used for operating the



Reconstruction of the Top of the Pivot Pier

bridge with electrical power. The first floor contains the gas tank, the water tank, a hot water heating plant and the gas engine. No interlocking plant is provided.

Because the channel of the river is bare rock it was considered unsafe to transmit the electrical power by means of a marine cable. The current is carried by wire to a pole mounted over the top of the tower and which carries the cross-

The New Draw Span with the Old Highway Floor Still in Place

arm which supports telephone and telegraph wires carried across the bridge. This pole consists of two pipes, an 8-in. extra heavy pipe on the outside which is held in a fixed position by the cross-arm and the wires and a 2½-in. pipe on the inside which turns with the bridge. A drum at the top of the pole contains collector rings for transferring the current to the swing span.

Falsework and Erection

Owing to the fact that the river has a rock bottom, piles could not be driven and the falsework consisted of frame

bents of six posts each, arranged in pairs to form towers, the longitudinal and transverse bracings being carried as low as the water level permitted. For falsework stringers, temporary use was made of floor beams from the old spans and stringers from the new spans, the stringers for the 254½-ft. spans being used in the erection of the 8 shorter spans.

Because the new highway deck could not be placed in service until all the new spans were erected, it was necessary to maintain the highway on the lower deck until the new bridge was entirely completed. The plans for the erection were therefore perfected with this in mind. The old trusses were dismantled, leaving the old floor system in place, the oxy-acetylene torch being used extensively in removing the old material. Because of the loose-jointed nature of the old trusses it was necessary to guy them thoroughly as soon as they were placed on falsework and any members were removed. After the old trusses were out of the way, the old floor was replaced by the new floor, panel by panel, and the old floor beams and stringers were taken out, depending upon the continuity of the old track rails to carry the highway deck until the panel of the new floor system was put in place. Owing to a difference in length in the old and new panels, the old stringers were cut off each time and blocked as required to fit up against the last new floor beam set.

The erection was started in July, 1915, beginning with enough falsework to carry the two spans at the east end of the bridge the falsework was used over and over as the work progressed, about 75 per cent. of additional falsework material being provided later. The short spans were completed by January 7, 1916. The erection of the draw span was started on November 22, 1915, and completed about March 1, 1916.

Owing to a delay in the delivery of the drum the trusses were erected except for the towers before the drum arrived. The bottom chords were jacked ½-in. above the final position and the threads, rollers and the drum in four sections were slipped under the trusses. The four tower posts were not erected until after the drum was in place to provide room for swinging out the boom of the derrick car while the drum sections were being erected. After the drum and its radial braces were completely assembled, the drum was rotated on the rollers until the holes in the top flanges of the drum registered with those in the bottom chord of the trusses, thus permitting the connection of the drum to the trusses.

The erection of the westerly 254½-ft. span, followed that of the draw span, but when the falsework for the easterly 254½-ft. span was to be placed high water made it necessary to stop the work on January 25. The stage of the river continued high and work could not be resumed until May 31.

The new bridge was designed by Ralph Modjeski, consulting engineer, Chicago, who was represented at the bridge by G. C. Hinckley, resident engineer. The Strobel Steel Construction Company, Chicago, had the contract for the entire new bridge including alterations to the substructure.

JOHN J. BERNET

John J. Bernet, vice-president in charge of operation of the Michigan Central, and resident vice-president at Chicago of the New York Central, has been elected president of the New York, Chicago & St. Louis, with office at Cleveland, succeeding W. H. Canniff, resigned. Mr. Bernet has been connected with the lines now included in the New York Central continuously since 1889, when he started with the Lake Shore & Michigan Southern as a telegraph operator. His entire career has been spent in the operating department, and he has made steady and consistent progress through the various grades in that department, serving consecutively as train despatcher, trainmaster, assistant superintendent, superintendent, assistant general superintendent, general superintendent, assistant vice-president and vice-president. Mr. Bernet belongs to the class of men whose progress is not spectacular, but who achieve success by great thoroughness and efficiency in every task which they are called upon to perform. Before engaging in railroad service he was for a time a blacksmith, and as one of his associates remarks, he learned early the importance of "striking while the iron is hot."

John J. Bernet

He is a rather quiet man of a retiring disposition, who by steady and painstaking application has come to be regarded as an unusually efficient operating officer. One of his striking characteristics is his ability to get to the heart of each problem that is presented to him, and to reach a prompt decision as to the necessary action. In this way he always has been able to keep up with his office work and spend a great deal of time on the road. He has never been a man to spare himself as far as hard work is concerned, and his subordinates have appreciated his willingness to consider the important details of various propositions submitted to him.

Mr. Bernet was born on February 9, 1868, at Brant, Erie county, New York. He was educated in the public schools at Buffalo, N. Y. He entered railway service in 1889 as a telegraph operator for the Lake Shore & Michigan Southern, and on March 12, 1895, was appointed train despatcher, which position he held until April 2, 1901. From April 2, 1901, to March 6, 1903, he was trainmaster of the Eastern division. On March 6, 1903, he was appointed assistant superintendent of the same division; on February 1, 1905, superintendent of the same division. On November 22 of the same year he was appointed assistant general superintendent of the same road at Cleveland, Ohio, which position he held until October 1, 1906, when he was appointed general superintendent. He was general superintendent until June 1, 1911, when he was appointed assistant to vice-president of the New York Central Lines West of Buffalo, with headquarters at Chicago. On April 15, 1912, his title was changed to assistant vice-president. On April 1, 1913, he was appointed vice-president in charge of operation, and on January 1, 1915, at the time

of the reorganization of the New York Central & Hudson River and the Lake Shore & Michigan Southern, and their consolidation into the New York Central Railroad, he was appointed resident vice-president at Chicago for the New York Central, acting as the general representative of the company in that territory. He also retained the vice-presidency in charge of operation of the Michigan Central.

Mr. Bernet has an extensive grape farm at Moorhead, Pa., and is an enthusiastic golfer.

MR. ACWORTH'S LATEST REVIEW OF THE AMERICAN SITUATION*

This is my tenth visit to the United States, of whose railway affairs I have been for about thirty years a diligent student. Every time I am brought into contact with American railways, the overpowering impression produced on my mind is of the marvelous results which the efficiency of the railroad men produces with the minimum expenditure, both of capital and income. It is not very far from accurate to say that the average mile of English railroad has cost as many pounds as the American mile has cost dollars. It is true that for our expenditure we have mostly double-track roads, while your typical road is only single tracked, but per mile of line you probably carry—we have no ton-mile and passenger-mile statistics in England—more tons of freight and nearly as many passengers as we do, and thanks to your concentration of load into wholesale units both of carload and trainload, your single track is normally capable of taking care of the traffic offered.

The Problem of Terminals

But I do not think it is so with your terminals. Fifteen tons of package freight in one thirty-ton car take much less room on the road than the same weight distributed over five of our little ten-ton cars, or "trucks" as we call them, but when fifteen tons come to be handled at the terminals and carted away by teams, they need just as much space in America as in England. In other words, you will have to spend vast sums of money to enlarge and improve your terminal accommodation, and the land required for the purpose you will have to buy and adapt at modern prices. One does not need to go outside of New York with the new Pennsylvania and Grand Central stations to see what new terminals cost in a great city.

Double Tracks and Other Improvements

But there is more than this. Even assuming that you can carry your present traffic along the road, statistics show that your traffic doubles every twelve years and, therefore, before long you will have to do a great deal of double tracking, and double tracking very often means practically rebuilding the railroad. Again, as the country gets more settled, traffic becomes more diversified; express and fast freight become more important. There will be more passenger trains, both through and local, not only due to closer settlement, but also to more exacting demands in matter of service. Now, express and fast freight trains not only carry less, but run at higher speeds than slow freight, and passenger expresses run at higher speeds still, so you will have both more trains on the line for the same amount of traffic and greater varieties in speed, and all this means, as every railway man knows, a great reduction in the carrying capacity of the line as measured in tonnage.

Public demands for abolition of grade crossings, for steel coaches with their enormous weight per passenger carried—three times that usual in England—for block signalling, for monumental stations, etc—all these things will imply immensity of expenditure. Mr. Hill estimated ten years ago that the railroads ought to spend a billion dollars a year to keep abreast of the public requirements. They have not spent it, not because the expenditure was unnecessary, but because the money was not forthcoming; and somehow you will have to catch up the arrears and take care of the future on an even more generous scale, or the development of the country will be brought to a standstill.

*An article by W. M. Acworth in the July Circular of the National City Bank, New York City.

New Capital Requirements

Can the railroads get all the money they need? The question is a very serious one, and I will not attempt to answer it. That in the past they have not been able to get out all the long-term bonds they would have liked to sell is sufficiently proved by the volume of short-term notes issued and frequently renewed at maturity. Why should an investor buy railroad bonds? Primarily, he wants security. The fact that over forty thousand miles of railroad are today in the hands of a receiver is sufficient proof that he does not always get it, and if railroads cannot sell bonds, still less can they issue common stock. Even the Pennsylvania Railroad, after seventy years of honest and intelligent work in developing the resources of what is perhaps the richest traffic territory in the world, earned in 1914 hardly more net income than sufficed to pay its modest six per cent dividend.

Why should the public invest in railroads, if the returns are less than on other investments and the security of the capital seems to lessen rather than increase? And if the American public refuses to invest, there is certainly no other source for new capital nowadays. The European market will have enough to do to take care of its own requirements for many a year to come.

For all that, the prospects for the future look to me far more bright than I could have imagined when I was last here, less than three years ago. I see from the replies to a circular sent out to its clients by a New York banking house that 1,310 correspondents report that hostility to the railroads is abating, while only 185 say that it still persists; and the same correspondents, by a majority of almost two to one, report that a five per cent advance in rates would not be seriously opposed. And a general five per cent increase, all of it net income be it observed, would put a very different aspect on the whole situation.

Hopeful Signs

The railroads need not merely cessation of hostilities, but active support and help from the public authorities. They cannot complain that in the past the legislatures have neglected them. On the contrary, the excess in quantity of railway legislation has been almost as conspicuous as the deficiency in its quality. But there are many signs that things are changing. Recent decisions of the Interstate Commerce Commission have shown that this most important body appreciates the situation, and is ready to help the railroads to reach a sounder financial position. The fact that one of your great political parties has put forward in its platform the unification of control under the single authority of the Federal Government is a most hopeful sign. The mere avoidance of waste owing to the necessity of complying with innumerable varying requirements as to methods of operation will be a great thing.

I question whether the public has any conception of the amount of time and money wasted owing to the multiplication of inquiries, rate schedules, accounts, reports, etc. I have seen an estimate that the railroads, taken all together, have to furnish about two million reports yearly to the various state and Federal authorities. Unification of control will put an end to such patent absurdities as the fact that, while the Interstate Commerce Commission recognizes that 2½ cents a mile is a reasonable fare, say, from Roches-

ter to Cleveland, if a passenger on the same train gets out at Buffalo, New York decides that he cannot reasonably be asked to pay more than 2 cents a mile!

Then your Federal valuation law of 1913 must soon begin to bear fruit. From what I have seen and heard of what has already been done, I am persuaded that any fair valuation, such as is now being carried out by engineers appointed by the government, will prove conclusively what I have always myself firmly believed, that the railroads of the United States are worth today far more than the sum at which they are capitalized.

I am quite sure that the American public mean to be fair, but they can hardly be expected to keep abreast of the railway situation, as it changes from year to year. They have been thinking too much hitherto of "old forgotten far-off things and battles long ago." They seem now, as proved by the proposal that a Congressional committee shall inquire into the whole situation, to be inclined to have done with the past and to turn their minds to the future. An exhaustive inquiry into the situation as it exists today can only be in the interest of the railroads and railroad investors. It will show, I am firmly convinced, that the railroads deserve well of the country; that per dollar of capital invested they do more work than any railroads in the world; that the rates they charge, having regard to the service rendered, are far lower than anywhere else in the world; but that the rates, as a whole, are not adequate to afford a steady and reasonable return, year in and year out, on the present investment, and to induce capitalists to make the great further investment which the public interest requires.

Once the knowledge of these basic facts, as I believe them to be, has been got into the public mind, I have no doubt that the railroads will be given such fair treatment as will produce the investment of all the capital required. It is to be hoped, however, that the public education will be speedily completed. For the expenditure of new capital on a generous scale must not be much longer postponed if the trade of the country is to continue to expand in the years ahead.

CONGRESSIONAL INVESTIGATION ASSURED

WASHINGTON, July 19.

Last Saturday the House of Representatives amended and passed the long pending Newlands resolution creating a joint House and Senate subcommittee to investigate railroad legislation, transportation, and government ownership. On Monday the Senate, without debate, agreed to the resolution as it came from the House; and this long delayed measure now goes to the President.

The principal amendment calls for a report to Congress January 8, 1917. Wireless and cable companies are added to the list of public utilities which the committee is to investigate. The investigating committee will consist of five senators and five representatives from the respective commerce committees.

In the course of the debate in the House a rather interesting disclosure was made. Chairman Adamson, in charge of the bill, was asked if the eight-hour day movement was included in the scope of the proposed investigation. To this Mr. Adamson replied in the negative; and in response to a question as to whether his committee had before it any resolution "in relation to the dispute between the railroads and the employees on that matter," Mr. Adamson answered:

"Four months ago when the clouds gathered above the horizon the Republican leader [Mr. Mann] and I investigated to see whether there would be any strike. I will not say where we went, but we were assured by the representatives of the employees that there would be no walkout, and they did not mean to stop the wheels. The Interstate Commerce Commission did not favor any investigation, and I concluded that no action was necessary, and dropped the subject."

The bill to amend the Cummins amendment (as to declaring value of baggage, etc.,) has been reported favorably to the House (Bill S. 3069 Report No. 944).

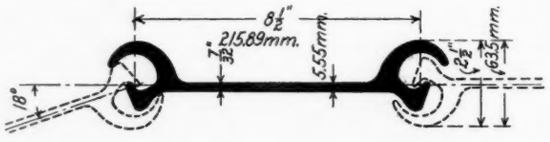
H. R. 16681, the clearance bill, has been reported to the House from the Interstate and Foreign Commerce Committee (Report No. 970).

An agreement has been reached by the conferees on the postoffice appropriation bill by which the Senate amendment, modified in some respects, but retaining only the substantial features of the Senate amendment relating to railway mail pay, will be retained in the bill. The agreement contemplates a reference to the Interstate Commerce Commission of any question relating to compensation for the railroads for carrying the mail. This is a substantial victory for the railroads. It seems likely that the provision allowing the Postoffice department to send second class matter, under certain conditions, by freight train will be retained in the law, but with a clause allowing aggrieved publishers to appeal to a federal court.

A NEW SHEET PILING SECTION

The new Lackawanna 8½-in. section, of which the illustration and table of properties appear below, was designed to give a wider range of selection to users of Lackawanna steel sheet piling. It is of the standard Lackawanna straight-web type with interlock consisting of similar hooks and guards on both edges, and is for use where a comparatively light section is required with high transverse strength and minimum weight in medium trench and cofferdam work.

The interlocked joint formed between adjacent piles is flexible through an arc of 18 deg. on each side of the center



Weight.		Section Modulus.			
Lb. Per sq. ft.	Lb. Per Lin. ft.	Per Single Section.	Per inch of Width.	Per Horizontal Foot of Wall interlocked in place.	Least Radius of Gyration.
20.75	14.633	1.100 in³	0.1294 in³	1.553 in³	0.509 in.

Section and Table of Properties

plane of the piling section. The hooks of adjacent sections engage to offer resistance to longitudinal displacement while the guards overlap and engage the outer surface of the hooks on the adjacent sections, thus preventing lateral displacement and co-operating to prevent longitudinal displacement. The joint can be disengaged only by withdrawing one pile.

In the development of this new section, special attention was given to secure high tensional and transverse strength, and at the same time to produce a pile which would have comparatively low weight per sq. foot. This steel sheet piling is made by the Lackawanna Steel Company, Lackawanna, N. Y.

THE ENGLISH CHANNEL TUNNEL.—A resolution in favor of the Channel Tunnel will shortly come before the house of commons. The annual report of the Northern Railway of France expresses regret that the scheme has not yet materialized, and intimates that it has fulfilled all its obligations, preserved its rights, and is ready to profit by the unexpected facilities which the application of electricity would give both to the piercing of the tunnel and to the operation of the submarine railway.

Failure of Government Ownership in Canada*

Influence of Unfortunate Location, Uneconomical Management and Politics Reflected in Intercolonial History

By Samuel O. Dunn

PART II

THE conclusion that at least two-thirds of the losses incurred by the Intercolonial are not due to its rates suggests that they must be due to uneconomical management. In this connection stress must be laid on the fact that the cost of providing railway service necessarily includes capital expenses, as well as operating expenses. A further fact which often is overlooked is that there is a very close relationship between capital expenses and operating expenses. Under either private or public ownership the public must ultimately pay all of both of these classes of expenses; and the amount of operating expenses will under either policy depend largely on the amount of the capital expenses efficiently incurred. To reduce the grades of a railway involves an increase of investment and fixed charges—in other words, of capital expenses; but if the investment is wisely and efficiently made, it will cause a still greater diminution of operating expenses. The total expenses will thereby be diminished. Likewise, if needed capital expenditures are not made, there will be needless increases of operating expenses; if capital expenditures are unwisely or inefficiently made, there will be needless increases of fixed charges; and in either case the total expenses will become needlessly large. This close relation between capital expenses and operating expenses illustrates the folly, so strikingly exemplified in Canada, of the common practice of keeping the accounts of government railways so as not to show the exact amount of interest paid on the investment, and of calling all their net earnings "profits." It would be equally rational to ignore the operating expenses also, and to call the total earnings "profits."

Bearing in mind these facts and principles, let us investigate the total expenses of the Intercolonial. Its cost to the public to June 30, 1914, including its losses, was $219,000 per mile. Interest on this at 4 per cent is $8,760 per annum, which, added to its operating expenses, $8,718 per mile, makes a total expense to the Canadian public for the service of the road of $17,478 per mile of line, without allowing anything for the taxes lost to the public because it is not privately owned.

To pay this total from its earnings the Intercolonial's rates would have to be raised 102 per cent. The Canadian Pacific on its eastern lines charges rates slightly higher than those of the Intercolonial; it handled in 1914 a traffic slightly smaller; it collected only $10,045 per mile of line in rates from the public; and yet it paid taxes, interest on its bonds, and 10 per cent dividends on its stock, 7 per cent of these being from earnings; and it had a surplus averaging $256 for each mile of line.

It may be contended by some that the inclusion of all the losses the Intercolonial has sustained in getting a basis for ascertaining its actual present expenses is not fair. The writer believes that this is the only method which discloses the amount which government ownership and management have cost and are costing the people of Canada. But, to avoid this objection, let us disregard the losses sustained prior to 1914. In 1914, the cost of construction of the Intercolonial was officially reported as $70,815 a mile. Interest on this at 4 per cent is $2,833. Added to operating expenses, $8,718, this makes a total expense per mile, as already indicated, of $11,541. Taxes on the same basis as those the Canadian Pacific paid would increase this to $11,671. The Canadian Pacific eastern lines, for each mile of line operated, collected 15 per cent less than this from the public, while handling only 6.5 per cent less traffic per mile; they paid taxes, and they earned $1,573 net operating income per mile; and the Canadian Pacific system, as already indicated, not only paid interest and dividends, but had a surplus. To have paid 4 per cent interest, and paid taxes and put aside surplus in the same proportion, the Intercolonial would have had to collect from the public $11,900 for each mile of its line, or 18 per cent more per mile than the Canadian Pacific eastern lines did. The data on which these comparisons are based are given in Table III.

TABLE III.

COMPARATIVE STATISTICS OF THE INTERCOLONIAL AND CANADIAN PACIFIC EASTERN LINES FOR THE YEARS 1914 AND 1915.

	Year Ended June 30, 1914.		Year Ended June 30, 1915.	
	Intercolonial.	Canadian Pacific Eastern Lines.	Intercolonial.	Canadian Pacific-Eastern Lines.
Mileage	1,457	4,596.2	1,459	4,786.9
Average cost (or capitalization) per mile	$70,815	$51,021*	$75,066	$47,863*
Passengers carried one mile per mile of road	137,390	172,790	115,105	126,208
Passenger-train miles per mile of road	2,096	2,499.5	1,939	2,170.1
Average passengers per train	51	69	46	58
Average rate per passenger per mile, cents	1.67	1.808	1.81	1.894
Average total earnings per passenger-train mile	$0.978	$1.599	$0.966	$1.409
Total passenger-train earnings per mile of line	$2,839.90	$3,895.94	$2,705.80	$3,057.07
Ton miles per mile of road	923,541	823,064	793,315	695,000
Revenue freight-train miles per mile of road	3,466.13	2,655.2	3,101.64	1,999.4
Average tons per train	264.74	309.98	260.54	347.56
Average rate per ton per mile, cents	0.60	0.716	0.52	0.719
Average earnings per revenue freight-train mile	$1.61	$2.219	$1.58	$2.50
Total freight revenue per mile of line	$5,568.54	$5,891.69	$4,887.64	$4,998.51
Operating revenue per mile of road	$8,625.13	$10,044.86	$7,745.15	$8,314.54
Total train miles per mile of road	5,562.25	4,987.4	5,033.9	3,987.1
Operating revenue per train mile	$1.55	$2.01	$1.54	$2.09
Operating expenses per mile of road	$8,717.87	$8,341.34	$7,775.89	$6,199.94
Operating expenses per train mile	$1.57	$1.67	$1.545	$1.56
Net earnings per mile of road	—$92.74	$1,703.52	—$30.74	$2,114.60
Taxes per mile of road	None	$130.30*	None	$123.90*
Operating income per mile of road	.....	$1,573.22	.....	$1,990.70

*Average for entire system. All computations furnished from official sources.

It is clear that the service of the Canadian Pacific, while profitable to its owners, costs the public much less in proportion than that rendered by the Intercolonial. And the expense of it is more equitably distributed. It is all paid by those who receive the service, while only from one-half to three-fourths of the total expenses incurred by the Intercolonial are borne by those who receive its service. The rest is borne by the taxpayers.

The question naturally arises why the total expenses of the Intercolonial are so great. Its "cost of construction"—the investment in it—as officially reported, amounting in 1914 to

*Part I of this article was published in the *Railway Age Gazette* of July 14, 1916. Reprinted by permission from The Journal of Political Economy, University of Chicago, July, 1916

$70,815 a mile, is excessive according to the standards of Canada and the United States. The average capitalization of the railways of the United States in 1914 was only $66,661; and an average mile of their line was a much better piece of property and handled substantially more traffic than the average mile of the Intercolonial. The average capitalization of the private railways of Canada, excluding duplications, was $53,619.[1] The average capitalization of the Canadian Pacific system was $51,021. Most of the privately owned railways of Canada, and conspicuously the Canadian Pacific, have received subsidies from the government. The receipts of the Canadian Pacific from its land grants amount to about $6,000 for each mile of its line. But the government aid it has received is far from adequate to account for the difference of over $17,000 a mile between its average capitalization and the Intercolonial's "cost of construction." The explanation of the Intercolonial's large cost of construction must be that expenditures on it have been made wastefully, or that its accounts have not always distinguished accurately between expenditures for construction and expenditures for operation.

That there long was scandalous waste in the construction of the Intercolonial is beyond question. Many years ago Sir Alexander Galt moved in Parliament that "the present system under which the road is being built as a public work of the Dominion is expensive and unsatisfactory; . . . and that in the opinion of this house the construction and future operation of the line should be committeed to private hands." Walter Shanly, the most eminent Canadian engineer of his day, who built the Hoosac tunnel, alleged that the Intercolonial "had already involved a vast waste of money and done much to contaminate public life." Sir John MacDonald, when prime minister, said that he was "tired of the disclosures about frauds and shortages, bankrupt contractors, and contractors who had made a fortune with suspicious ease, and was disposed after construction was completed to turn over the operation of the line to the Grand Trunk or some other company." Before the Civil Service Commission of 1892, Collingwood Schreiber, a distinguished engineer, then deputy minister of railways, and for some years general manager of the line, testified that he had taken some sand from a gravel-pit in the woods near Gloucester Junction for which he offered $5 as ample compensation. The owner, backed by local politicians, demanded $70,000, and in the end obtained $16,000. "The public's mind," said Mr. Schreiber, "is pervaded with the idea that one has a right to get all one can from the public treasury." The original estimate for an extension from Hadlow, near Quebec, to St. Charles Junction, fourteen miles long, was $600,000. Property owners whose land and buildings were condemned appealed with such success to local politicians for assistance, "and swore one for another as to values" so ably, that the line finally cost $2,200,000.[2] It seems to have been a common practice to let contracts for new construction and improvements to concerns and individuals because they were supporters of the party in power.

The only structures or facilities of the road whose character tends to explain its relatively high cost are certain of its passenger stations, which are very large and pretentious-looking for the towns in which they are situated. One is told in Canada that these are due to the influence of local members of Parliament. Appropriations for passenger stations on the Intercolonial sometimes are part of the "pork barrel" in Canada, as appropriations for postoffice buildings are in the United States.

Let us turn now from the road's capital expenses to its operating expenses. During most of the last ten years it has handled more traffic per mile, both freight and passenger, than the eastern lines of the Canadian Pacific. Within recent years the Canadian Pacific has had a heavier passenger business; but the Intercolonial still has a denser freight traffic. This was true in 1914; and in that year it ran 5,562 trains over each mile of line, as compared with 4,987 run by the Canadian Pacific eastern lines. Bearing these facts in mind, it is interesting to study the analysis of operating expenses given in Table IV:

TABLE IV.

OPERATING EXPENSES, 1914.

	Intercolonial.		Canadian Pacific Railway Eastern Lines.	
	Total Operating Expenses per Mile.	Per Cent of Total Operating Expenses.	Total Operating Expenses per Mile.	Per Cent of Total Operating Expenses.
Maintenance of way and structures	$1,454.00	16.66	$1,744.00	21.87
Maintenance of equipment.	1,916.00	22.06	1,621.00	20.33
Conducting transportation.	4,936.00	56.56	4,247.00	53.27
Traffic expenses	199.00	2.22	171.00	2.15
General expenses	245.00	2.55	188.00	2.37

A question arises: Why are the Intercolonial's expenditures for maintenance of way and structures smaller than those of the Canadian Pacific, when the amount of traffic it handles and the number of trains it runs are larger? It may be answered that it is because the Intercolonial is more economically operated. This explanation can hardly be accepted, because while its total traffic, passenger and freight, per mile is only about 6.5 per cent heavier than that of the Canadian Pacific eastern lines, its cost of maintenance of equipment per mile is 11.5 per cent greater, its cost of conducting transportation per mile 13.5 per cent greater, its traffic expenses per mile 16.5 per cent greater, and its general expenses per mile 30 per cent greater. The advocates of government ownership claim that it would save money by doing away with the "princely" salaries paid to the higher officials of railways. The salaries of general officers are included in "general expenses." These, as just noted, are 30 per cent higher per mile on the Intercolonial than on the Canadian Pacific eastern lines; and the expenses of the railway department of the government are not included in this calculation. The Intercolonial's small expenditures for maintenance of way and structures are partly due to the fact that, on the whole, its roadway and track are not kept in as good condition as those of the Canadian Pacific. A further explanation may be that expenditures which really should be charged to maintenance of way are charged to construction. The line between maintenance of way, and additions and betterments, is hard to draw accurately; and where a management is confronted with chronic deficits, as on the Intercolonial, it is under a constant temptation to make as good a showing as possible regarding operating expenses, by charging everything it can to capital account.

The small expenditures of the Intercolonial for maintenance of way are not new. In the five years ending with June 30, 1914, it spent on this account an average of only $1,317 per mile of line, while the Canadian Pacific system, handling a smaller traffic per mile, spent an average of $1,497. The fact that the capital—or "cost of construction"—account of the Intercolonial is rapidly growing larger without causing reductions, absolutely or relatively, in transportation expenses, supports the theory that its low figures for maintenance of way expenses are largely fictitious.

There is nothing fictitious, however, about its relatively large expenditures for other accounts. One of the surest indications of uneconomical and inefficient management is that a road is spending a relatively small part of its earnings for maintenance and a relatively large part for conducting transportation and for general and traffic purposes. What is spent for maintenance goes into the physical property and helps to keep up or improve the service, while what is spent for conducting transportation and for general and traffic purposes adds nothing to the physical property, but is gone forever. Relatively large expenditures for maintenance of way

[1] "Operating Results of Canadian Railways in 1914," by J. L. Payne, controller of statistics of Canadian railway department, in *Railway Age Gazette*, March 26, 1915.

[2] Montreal Gazette, October 21, 1915.

are more important than those for maintenance of equipment; for the latter may be due to a system of management which provides and uses an unnecessarily large amount of equipment. It is especially important to keep down the cost of conducting transportation, not only because the outlay made for it is gone forever, but because it is much the largest item of railway expenses.

The main reason for the Intercolonial's relatively high cost of conducting transportation is obvious. The most effective means for restricting this part of expenses is to handle traffic in the largest possible carloads and trainloads. Now, the Intercolonial has a long average haul per ton, 265 miles; it has a denser freight traffic than the Canadian Pacific eastern lines; and yet in 1914 it carried only 265 tons per train, as compared with 310 tons for the Canadian Pacific eastern lines. In consequence it ran 30 per cent more freight trains over each mile of line to handle 12 per cent more freight traffic. Similarly it ran 84 per cent as many passenger trains over each mile of line to handle 74 per cent as much passenger traffic. The comparatively small trainloads of the Intercolonial help to explain not only its high transportation expenses, but also its high maintenance of equipment expenses. The more trains run to handle a given business, the more equipment there must be provided and maintained and the larger, other things being equal, will be the expenditures for maintenance of equipment.

The road's relatively large expenditures for conducting transportation and maintenance of equipment are no more a new thing than its relatively low expenditures for maintenance of way. During the five years ending with 1914, while its maintenance of way expenses per mile were less than those of the Canadian Pacific system, its maintenance of equipment expenses averaged $1,746 per mile, or 33 per cent more, and its conducting transportation expenses $4,075 per mile, or 19 per cent more.

In the United States 20 per cent of the operating expenses of the railways are incurred for maintenance of way, while on the Intercolonial less than 17 per cent are incurred for that purpose. In this country maintenance of equipment expenses are 23.8 per cent of total operating expenses, while on the Intercolonial they are 22 per cent. On the railways of the United States less than 51 per cent of operating expenditures are made for conducting transportation; on the Intercolonial, almost 57 per cent. The Intercolonial makes 39 per cent of its operating outlay for both classes of maintenance and 61 per cent for other purposes. The railways of the United States make 44 per cent of theirs for maintenance and only 56 per cent for other purposes. The railways of the United States, with a capitalization smaller than the Intercolonial's cost of construction, handle 5 per cent more passenger traffic and 27 per cent more freight traffic per mile, with only 2.6 per cent greater operating expenses. One need not be expert in the analysis of railway statistics to see that those of the Intercolonial indicate a management which is extremely uneconomical as compared with that of the average railway in Canada or the United States.

Little of the blame for this poor showing can apparently be placed on the present minister of railways, Hon. Frank Cochrane, or the present general manager, F. P. Gutelius. When Mr. Cochrane came into office a few years ago he evidently realized that the road had long been wretchedly mismanaged; for he put Mr. Gutelius, an experienced and able railway man, a former officer of the Canadian Pacific, in charge, with large authority. Mr. Gutelius went energetically to work to increase earnings and reduce expenses. He received the loyal support of most of the officers; and he has continued, up to the present time, his efforts to improve the results secured.

The general confusion and reduction of railway earnings caused by the war have made it difficult to measure the effects of his exertions. And unfortunately the Canadian public, especially that part living in the provinces in which the Intercolonial operates, and the representatives of this part in Parliament, have grown accustomed to having, and, indeed, insist upon having, the Intercolonial managed in ways which mainly account for its high expenses. Almost every increase of rates or reduction in expenses which the present management has attempted to make has encountered opposition which soon has been supplemented by or converted into political pressure. When it tried to reduce the excessive local freight and passenger service being given, the communities affected appealed to their deputies, and they to the minister of railways. When efforts have been made to dispense with needless employees, deputies have interposed in defense of their partisans. The fiscal year ending on June 30, 1915, was a period of acute business distress in Canada. There was a heavy decline in railway traffic. How much more freely and energetically the management of a private railway company can act in such an emergency than the management of a state railway subject to political pressure is indicated by the fact that while the Intercolonial suffered a loss of total earnings per mile of 12 per cent and reduced its operating expenses 11 per cent, the Canadian Pacific eastern lines, with a loss of earnings of 20 per cent per mile, reduced their operating expenses 25.7 per cent. The management of the Intercolonial could not have done so well as it did if it had not been saved the trouble of laying off numerous employees by having them voluntarily enlist in the army. It did not discharge these; it simply did not replace them.

When a railway produces such results over a long period they may be immediately attributable to a number of causes, but these minor causes usually are themselves the effect of a few major causes. One of the major causes in this case has been that the officers in direct charge of the property have had little incentive to manage it well. The public and Parliament have not demanded this as the stockholders and directors of a railway company do. Consequently, there has been a feeling of comparative indifference regarding results on the part of the officers. Another of the major causes has been the influence of politics. This has been *the* major cause. The part which politics formerly played is freely admitted by the officers of the road, although they say that conditions are somewhat different now. The prevailing low rates have been made as a sop to the people, and especially to the French population, of the eastern provinces. "Almost every abuse known to railroading took root and flourished, such as underbilling—that is, permitting a favored shipper to load the cars with a larger quantity of goods than he paid for, while his competitors on the other side of politics were restricted to a standard load and mulcted for any excess; the granting of secret rebates; the maintenance of an excessive number of stations and employees in order to swell the political influence of the road at election times; absurd classifications; unjust tariffs; the acquisition of more or less useless branch lines to serve partisan ends, and so on."[1]

It was customary for the party in power to buy railway supplies only from its supporters; and the story is told of a dentist who engaged in the manufacture of a certain device expressly to market it on the Intercolonial by means of his political affiliations. It was common practice largely to increase the number of employees some weeks before election, and every officer of the road frequently had the experience of coming to his office and finding among his subordinates the faces of men he had never seen before, and who had been put on his payroll at the instance of politicians. If an influential politician wanted a man given a job on the railway he did not bother to take up the matter with the general manager or even with the division superintendent. He wrote a letter to the trainmaster or the roadmaster and ordered his friend and supporter employed. If an employee was discharged for incompetency or other good cause, he could

[1]Mortreal Gazette, October 21, 1915.

usually get reinstated if he had political pull. When business fell off, politics made it impossible to reduce the number of employees and operating expenses proportionately. Political influence was used not only to secure excessively large and expensive passenger stations, but also unnecessary and unprofitable passenger and freight service. For example, when the present management came in it found that numerous passenger trains were being run into and out of St. John, Halifax, Sydney, and Newcastle, to enable leading citizens of these small cities to live in the "suburbs." Most of these trains were earning only fifteen to fifty cents per mile, but when the management tried to reduce the service it encountered a storm of opposition which soon became largely political.

As already indicated, the present management is trying to eliminate political influences and to put the operation of the road on a business basis. But the effects of the old régime are still apparent, and, as has been shown, opposition instead of assistance is offered by the part of the public served by the Intercolonial, while very little help is received from the rest of the people of Canada.

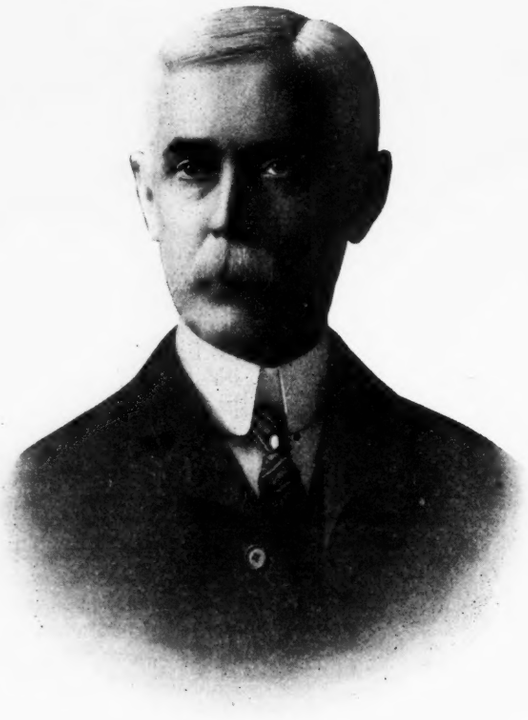
One of the arguments always advanced for government ownership is that the managements of state railways will and should strive rather to promote the welfare of the people than to earn profits; and it may be contended that to show that the Intercolonial's management has been dominated by politics, that its rates have been made too low, and that there has been waste in its construction and operation, proves nothing regarding the desirability of government ownership and management, because it takes no account of the influence which has been exerted on the development and prosperity of the territory which the road serves.

The question as to the amount and character of the influence which the Intercolonial has exerted on the development and prosperity of the maritime provinces is a somewhat difficult one to answer. It is easily demonstrable by official data regarding the changes in the population, the agriculture, and the industry of these provinces and of other parts of Canada and the United States, that progress in the territory served by the Intercolonial has been relatively small and slow. In fact, it probably has been as small and slow as in any other equally large territory in Canada or the United States which has any considerable natural resources. Doubtless, however, this is due to a combination of circumstances. The natural resources of the maritime provinces from either an agricultural or a manufacturing standpoint are not great, and their population is to a large extent naturally quite conservative. One thing may be said, however, with certainty. This is that the material progress made in the territory served by the Intercolonial has not been such as to support the argument that government management of railways will tend more strongly to promote the material well-being of the public than private management.

W. H. CANNIFF

William Henry Canniff has resigned as president of the New York, Chicago & St. Louis, with office at Cleveland, Ohio, after having held that office for 18 years and after a consecutive railroad experience of 53 years. Mr. Canniff began as a night watchman, later became a station agent, and until 1898, when he was elected president of the Nickel Plate, his official positions had been entirely in the operating department on lines which later became parts of the Lake Shore & Michigan Southern. He was general manager of the latter road when he was elected president of the Nickel Plate.

As a railroad president he has been distinguished for his close application to his work, for his unusual familiarity with the details of all departments, for his fairness to employees, the public and his competitors, and his all-around ability as an executive. He has been an unremitting student of all phases of railroad work and has enjoyed remarkably intimate relations with his employees, with whom he was very popular. His administration of the Nickel Plate property has been a highly successful one.



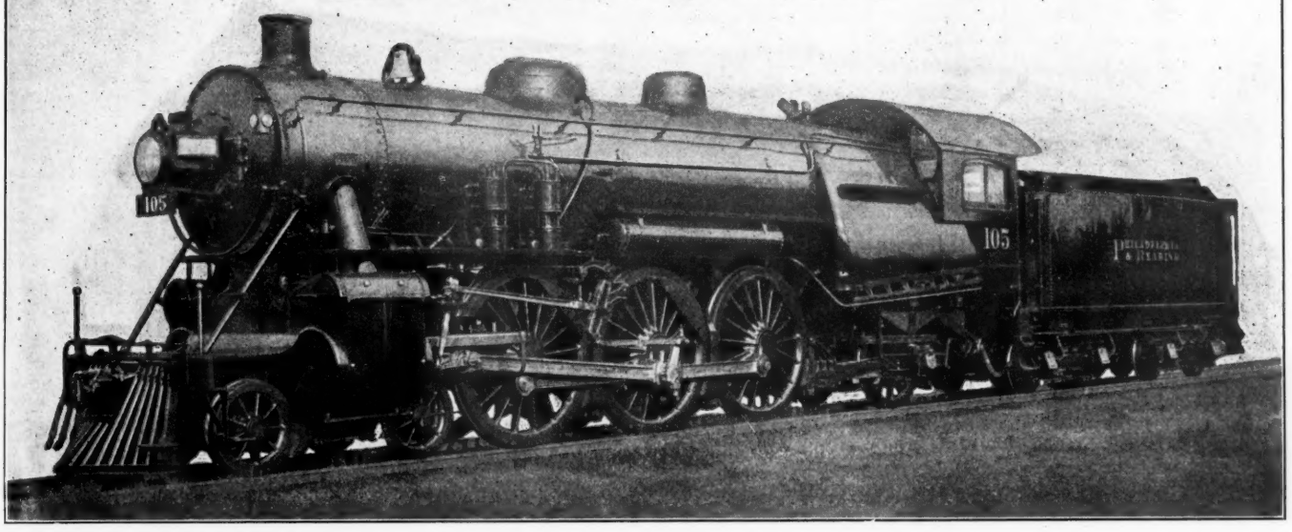
W. H. Canniff.

Mr. Canniff was born on October 22, 1847, at Litchfield, Mich. He began his railway service in 1863 as night watchman on the Michigan Southern & Northern Indiana at Osseo, Mich. After two years he was promoted to agent of the same road at Trenton, Mich., where he remained for three years. From August, 1868, to August, 1872, he was joint agent for the Michigan Southern & Northern Indiana and the Louisville, New Albany & Chicago at Salem Crossing. In 1872, he was made traffic master of the Kendallville division of the Lake Shore & Michigan Southern. He was later transferred to the Chicago division and in November, 1880, he was appointed supervisor of the Lansing division of the same road, including the Detroit, Hillsdale & Southwestern, and the Fort Wayne & Jackson railroads. After nine years in this capacity he was appointed on November 1, 1889, assistant general superintendent of the Lake Shore, on January 1, 1892, he was appointed general superintendent and from March, 1896, to May, 1898, he was general manager of the same road. On the latter date he was elected president of the New York, Chicago & St. Louis.

RAILWAYS ASSIST MILITARY IN EAST AFRICA.—A despatch on the operations in German East Africa, says: "The rapidity of the advance and the distance to which it was carried must almost inevitably have caused a breakdown in the transport but for the unremitting exertions of the railway engineers who carried forward the railway from the Njoro Drift, east of Salaita, to Taveta and the Latema Nek, at an average rate of a mile a day, including surveying, heavy bush cutting and the bridging of the Lumi river."

Pacific Type Locomotives for the Reading

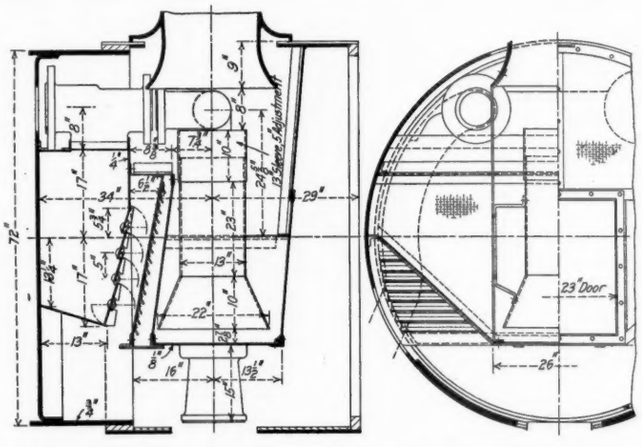
These Are the First Engines with This Wheel Arrangement Built for This Road; Light Reciprocating Parts



Philadelphia & Reading Pacific Type Locomotive.

THE Philadelphia & Reading has recently placed in service five locomotives of the Pacific type, which are the first of that type to be used on this road. These locomotives were designed to haul heavy passenger trains in very fast service, with a limit of 60,000-lb. load on each pair of driving wheels. The locomotives weigh, in working order, 273,600 lb., of which 176,900 lb. is on the drivers, 38,000 lb. is on the leading truck and 58,700 lb. on the trailer. The loaded weight of the tender is 160,000 lb.

With 25 in. by 28 in. cylinders, 200 lb. boiler working pressure and driving wheels 80 in. in diameter, the maximum tractive effort is 37,200 lb., giving a factor of adhesion



Front End Arrangement of the Reading Locomotive

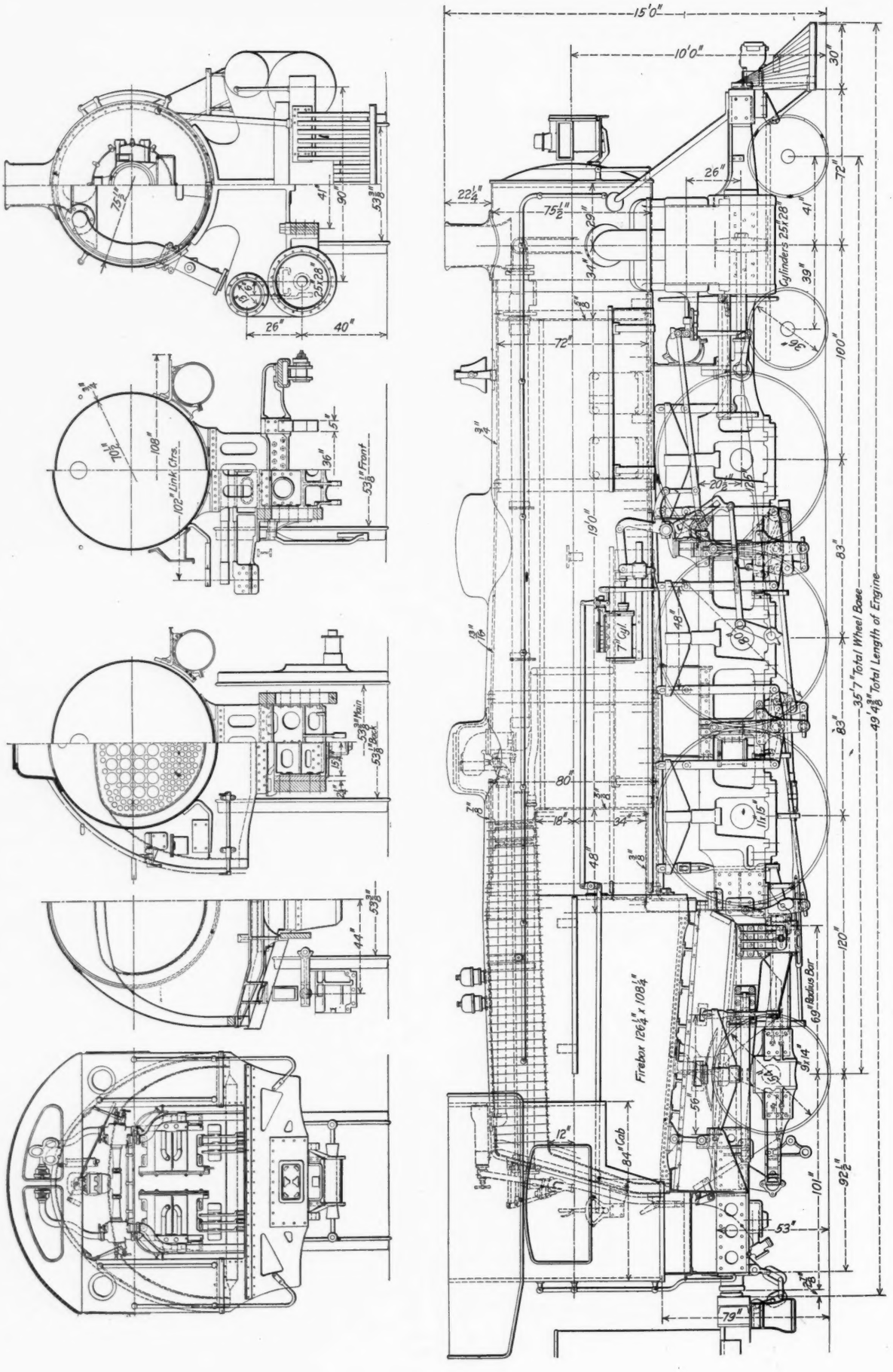
of 4.76. The valves are of the piston type, 13 in. in diameter, with 7 in. maximum travel, 1⅜ steam lap, 5/16 in. lead and ¼ in. exhaust clearance. They are driven by Walschaert valve gear, which, together with the reciprocating parts, has been made as light as possible to reduce the ill effects from the counterbalancing. The total weight of the reciprocating parts for one side is 1,237 lb., which, with 98,000 lb. piston load, the full boiler pressure being considered as acting on the piston for this purpose, gives a piston load of 79 lb. per pound weight of reciprocating parts. This compares with a corresponding figure of 83 lb. in the case of the Pennsylvania Railroad Atlantic type engines, class E6S, and 87 lb. for that road's K4S Pacific type engines. In the Reading engine 65 per cent of the reciprocating parts is balanced, the dynamic augment at a speed of 80 miles per hour being 41.5 per cent of the static weight on the drivers.

The boiler is of the Wootten type, with 200 lb. working pressure, the diameter at the front end being 72 in. and the greatest diameter 80 in. It has a firebox 10 ft. 6 in. long by 9 ft. wide, giving a grate area of 94.5 sq. ft. There is a 48 in. combustion chamber which provides a length of 19 ft. for the 163 2¼-in. tubes and 30 5½-in. flues. The heating surface of the tubes and flues is 2,644 sq. ft., and that of the firebox is 282 sq. ft., giving a total evaporative heating surface of 2,926 sq. ft. The superheating surface is 652 sq. ft. The fuel used is anthracite coal.

The extreme height of the locomotive is 15 ft. and the center line of the boiler is 10 ft. above the rail. The leading truck wheels are 36 in. in diameter; the trailing truck wheels, 54 in. The total engine wheel base is 35 ft. 7 in., while the total wheel base of the locomotive and tender is 67 ft. 11⅜ in.

An interesting feature of these locomotives is the front end arrangement which is intended especially to prevent the throwing of fire from the stack. The officers of the Reading state that this arrangement is giving every satisfaction. The smokestack proper has an inside extension of only 9 in., there being a petticoat pipe with an adjustable sleeve, the top of this pipe being 8 in. below the stack extension and the bottom 2⅞ in. above the top of the exhaust nozzle, which is 15 in. high. There is a netting placed almost vertically both in front of and behind the petticoat pipe and a series of deflectors is placed between the superheater dampers and the back netting, these deflectors having a tendency to throw the cinders downward and prevent the cutting out of the netting, as well as helping to break up the large cinders. The superheater damper arrangement is unusual; as will be seen from the drawing, it is made in four sections.

The tender has a water capacity of 8,000 gal. and a coal



Elevations and Sections of the Philadelphia & Reading Pacific Type Locomotive

capacity of 12.85 tons; it has a wheel base of 19 ft. 9 in. and is fitted with a water scoop. The locomotive is provided with two 9½-in. Westinghouse air pumps and the special equipment includes Ragonnet reverse gear, Cole trailer truck and Franklin fire door. The following table gives the principal dimensions and data:

General Data

Gage	4 ft. 8½ in.
Service	Passenger
Fuel	Anth. Coal
Tractive effort	37,200 lb.
Weight in working order	273,600 lb.
Weight on drivers	176,900 lb.
Weight on leading truck	38,000 lb.
Weight on trailing truck	58,700 lb.
Weight of engine and tender in working order	433,600 lb.
Wheel base, driving	13 ft. 10 in.
Wheel base, total engine	35 ft. 7 in.
Wheel base, engine and tender	67 ft. 11⅜ in.

Ratios

Weight on drivers ÷ tractive effort	4.76
Total weight ÷ tractive effort	7.35
Tractive effort × diam. drivers ÷ equivalent heating surface*	763
Equivalent heating surface* ÷ grate area	41.4
Firebox heating surface ÷ equivalent heating surface,* per cent	7.2
Weight on drivers ÷ equivalent heating surface*	45.3
Total weight ÷ equivalent heating surface*	70.1
Volume both cylinders	15.9 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	245
Grate area ÷ vol. cylinders	5.95

Cylinders

Kind	Simple
Diameter and stroke	25 in. by 28 in.

Valves.

Kind	Piston
Diameter	13 in.
Greatest travel	7 in.
Outside lap	1⅜ in.
Inside clearance	¼ in.
Lead in full gear	5/16 in.

Wheels.

Driving, diameter over tires	80 in.
Driving journals, main, diameter and length	11 in. by 15 in.
Driving journals, others, diameter and length	11 in. by 15 in.
Engine truck wheels, diameter	36 in.
Trailing truck wheels, diameter	54 in.
Trailing truck, journals	9 in. by 14 in.

Boiler

Style	Wootten
Working pressure	200 lb. per sq. in.
Outside diameter of first ring	72 in.
Firebox, length and width	10 ft. 6 in. by 9 ft.
Tubes, number and outside diameter	163—2¼ in.
Flues, number and outside diameter	30—5½ in.
Tubes and flues, length	19 ft.
Heating surface, tubes and flues	2,644 sq. ft.
Heating surface, firebox	282 sq. ft.
Heating surface, total	2,926 sq. ft.
Superheater heating surface	652 sq. ft.
Equivalent heating surface*	3,904 sq. ft.
Grate area	94.5 sq. ft.
Smokestack, height above rail	15 ft.
Center of boiler above rail	10 ft.

Tender

Weight, loaded	160,000 lb.
Wheels, diameter	36 in.
Journals, diameter and length	6 in. by 11 in.
Water capacity	8,000 gal.
Coal capacity	12.85 tons

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

AN AMERICAN RAILROAD IN URUGUAY.—The Republic of Uruguay, with an area of 72,172 square miles, had, in 1913, 1,639 miles of railroad. By the various lines composing this system the interior of the country has been opened up and communication has been well developed with the principal seaport, Montevideo, in the extreme south. Toward the west and northwest, connection is effected with the ports on the Uruguay River and the western part of south Brazil. Toward the north the Brazilian frontier is touched and there is now direct service into southern Brazil, eastward to Rio Grande and Porto Alegre, and directly northward to São Paulo and Rio de Janeiro. Toward the east and northeast, although projected lines to the Brazilian frontier have not been constructed, the railroad has advanced considerably within the last few years. These railroads all center at Montevideo, and good service is offered through the interior touched by them. There has been, however, need of other lines which will serve as feeders to the main lines already constructed or, acting independently, accomplish a similar purpose.

ONE SYSTEM OF CHECKING L. C. L. FREIGHT*

By W. F. Northrup

Agent, New York Transfer Station, Delaware, Lackawanna & Western, Secaucus, N. J.

The most important detail in the handling of l. c. l. freight is the correct checking of the shipments. Failure on the part of the check clerk to properly tally and forward the shipments to the proper cars is costing the railroads a sufficient amount of money on account of losses to make this feature paramount in any investigation leading toward improved efficiency. There are so many different methods in use to cover this particular feature that time and space will not permit a discussion of the advantages and disadvantages of the different systems.

After considerable investigation during which numerous methods of checking were experimented with, we have adopted on the Lackawanna what is known as the "Carbon Ticket System." This is really nothing more or less than a combination of other methods of tallying freight and is the result of a study of the causes of improper loading. While this system has not eliminated loading errors it has reduced them sufficiently to demonstrate the effectiveness of the method. The carbon tickets do not differ materially from the various other forms of the so-called vericheck ticket, which are generally in use, except that they are bound in pads and each alternate ticket bears a carbon back. This arrangement results in the issuance of each ticket in duplicate. The information shown on these tickets is as follows:

First—Spot number;
Second—Shipment number;
Third—Number of pieces on truck;
Fourth—Truckman's number;
Fifth—Check clerk's number.

In operating this system each shipment passing through the transfer station is assigned an individual number. When the ticket is issued the original is turned over to the trucker who takes it with the freight to the outbound car, where it is deposited in a box hanging inside the car. The tickets in these boxes are inspected at frequent intervals by a verifier, whose duty it is to see that all of the spot numbers in the first space on the ticket agree with the number of the spot in which the car is standing.

In case of an error steps can be taken immediately to remove the freight and place it in the proper car. In this manner errors made by the truckman are immediately noted and can be corrected without delay. Investigation however has proved that no small number of errors are due, not to the truckman, but to the check clerk; hence the idea of the carbon ticket. The duplicate copy of the original ticket is retained by the check clerk until he completes the out-turn of the car

TRUCKER'S ERRORS

Month	Packages retransferred to proper car	Packages found in improper car too late to transfer. Traced by wire	Total
January, 1915	60	2	62
February	90	3	93
March	178	1	179
April	200	2	202
May	146	5	151
June	169	7	176
	843	20	863

CHECKER'S ERRORS

January, 1915	31	25	56
February	36	14	50
March	38	56	94
April	88	44	132
May	55	27	82
June	116	65	181
	364	231	595
Grand total	1,207	251	1,458

*Received in the contest on The Handling of L. C. L. Freight.

in which he is working, after which the duplicate tickets with the way-bills are turned over to another verifier who immediately checks each ticket back against the original way-bills. Any discrepancy in the out-turn of the car is detected immediately.

To demonstrate the effectiveness of this system and to give an idea of just how many pieces of freight were loaded at this station in error, such error being detected and the freight reloaded to the proper cars I give below a statement for the first six months of 1915 which is self-explanatory.

Aside from the actual errors corrected as demonstrated in the above statement, the moral effect on each trucker and checker has avoided errors, the number of which cannot be estimated. This system is not infallible. Loading errors are still made which are not in every case detected, but they are few and far between. Following are a few of the important advantages which have been noted as a result of this system:

1. Errors made by each truckman and check clerk are known within 24 hours, and by maintaining a daily record the agent is in a position to detrmine just which of his employees are delinquent and can deal with them accordingly.

2. It has reduced over and short reports 60 per cent;

3. It is invaluable as a record in handling O. S. & D. and claim papers.

In connection with the carbon ticket system we maintain an individual record of each of the men employed at the station; and each error noted either by means of tracers, correspondence, O. S. & D. reports or claims has been charged against the man responsible for it. When any man's record indicates that he is not capable of performing the duties assigned to him he is suspended from service for either 10, 15, 20 or 30 days, according to the seriousness of his offense. Continued errors result in dismissal.

To stimulate interest in our check force we have installed a bonus system for the checkers, the cost of which is $10 monthly. This money is distributed in three prizes, consisting of a first prize of $5, a second prize of $3 and a third prize of $2 monthly. These awards are based on a demerit system and are given to the three check clerks who receive the fewest number of demerits per ton handled during the month. This method of awarding the prizes necessitates not only accuracy on the part of the check clerk but also his doing a reasonable amount of work to be considered for the award. The demerits charged against the check clerks include two demerits for each piece of freight loaded to the improper car; two demerits for each day's absence from duty; one demerit for each error in issuing a ticket, whether or not an actual error in loading is involved, and one demerit for each failure to comply with station rules and regulations, of which each checker has a copy.

This bonus system has worked very satisfactorily and has developed several men who can check an average of 70 to 80 tons of freight daily with loading errors not averaging over 5 to 10 pieces per month. A corresponding improvement is noted in the entire force, and the interest displayed in striving for the money has caused a very satisfactory decrease in improper loading with the resulting claims. Below I give the tonnage handled at this station for the first 5 months of 1915, showing the approximate number of pieces of freight handled and the number of pieces improperly loaded each month:

Month.	Tonnage.	Number of pieces of freight handled. (Estimated)	Number of pieces of freight improperly loaded
January	17,624	.....	114
February	17,894	.....	98
March	21,484	.....	122
April	21,952	.....	451
May	21,196	.....	260
	100,150	3,120,000	1,045

We have also effected a material reduction in the number of claims handled through the station at New York transfer by the use of the carbon ticket system. Below I give figures showing to just what this reduction amounted as regards claims handled during the first six months of 1915 as compared with the first six months of 1913, the carbon ticket not being in use at this station during the earlier period. These figures include all freight claims and freight claim letters on which we were requested to supply a record. The amount of money involved cannot be shown, however, as the claim papers did not in all instances show it.

Month	Claims handled in 1913	Claims handled in 1915	Decrease
January	423	302	121
February	445	283	162
March	426	313	113
April	474	265	209
May	502	225	277
June	383	260	123
	2,653	1,648	1,005

TRAIN ACCIDENTS IN MAY[1]

The following is a list of the most notable train accidents that occurred on railways of the United States in the month of May, 1916:

Collisions

Date	Road	Place	Kind of Accident	Kind of Train	Kil'd	Inj'd
4.	Central Ga.	Mogul.	bc	P. & F.	0	3

Derailments

Date	Road	Place	Cause of Derailm't	Kind of Train	Kil'd	Inj'd
1.	Norfolk & W.	Solitude	b. rail	P.	0	30
2.	Denver & Rio G.	Farnham.	unx	P.	0	0
9.	Norfolk & W.	Mineral Sp'gs.	d. truck	P.	0	32
11.	Seaboard A. L.	Manson.	acc. obst.	P.	2	1
16.	Missouri, K. & T.	Clinton.	b. rail	P.	0	7
16.	G. H. & S. A.	Nulo, Tex.	b. rail	P.	0	7
17.	Norfolk & W.	Pembroke.	slide	F.	0	3
18.	N. Y. N. H. & H.	Braintree.	unx	P.	0	3
20.	N. Y. N. H. & H.	Waterbury.	unx	F.	1	0
30.	Denver & Rio G.	Grand Valley	unx	P.	0	9

The trains in collision near Mogul, Ga., on the 4th were eastbound passenger No. 18 and westbound freight No. 37. Both trains had been brought nearly to a stop, and the damage to the engines was not great. Three persons were injured. The signalman at Mogul had admitted the freight to the block section occupied by the passenger train.

The train derailed on the Norfolk & Western near Solitude, Va., on the evening of the 1st was northbound passenger No. 2, and four passenger cars fell down a bank. About 25 passengers and 5 employees were slightly injured. The cause of the derailment was a broken rail.

The train derailed at Farnham, Utah, on the morning of the 2d was eastbound passenger No. 16, and the engine and first five cars were ditched. No persons were seriously injured. The cause of the derailment was not determined. The tender was the first vehicle to run off the rails.

The train derailed near Mineral Springs, Ohio, on the 9th was an eastbound local passenger. The injuries to persons are reported as all having been slight. The tender and four coaches fell down a bank. The derailment is believed to have been due to the failure of a safety hanger of the spring plank of a truck of the mail car.

The train derailed at Manson, N. C., on the 11th was southbound passenger No. 7. The train was drawn by two engines and when running at about 45 miles an hour was thrown off the track at a switch, the tender of the leading engine being the first vehicle to leave the rails. The switch was slightly open, having been displaced by a short iron rod 1⅞ in. in diameter, the presence of which rod has not been explained. One fireman and one trainman (who was off duty and riding on the train without authority) were killed, and one engineman was injured.

[1]Abbreviations and marks used in Accident List:

rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

The train derailed near Clinton, Mo., on the 16th was the southbound Texas special express. Five passenger cars fell down a bank. Three passengers and four trainmen were injured. The cause of the derailment was a broken rail.

The train derailed near Nulo, Tex., on the 16th was No. 10, eastbound, the Sunset Limited Express. Three passenger cars, a mail car and an express car were partly overturned. Five passengers and two trainmen were slightly injured. The cause of the derailment was a broken rail. The rail was of 80 lb. section laid in 1904, and broke because of an internal transverse fissure.

The train derailed near Pembroke, Va., on the 17th was a westbound freight. The locomotive, a new Mallet, was overturned and fell down a bank. The engineman, fireman, and a brakeman were injured. The engine struck a rock about the size of a small barrel, which had in some way become dislodged from the mountain side and rolled to the track at a place where the view along the track was very short.

The train derailed at Braintree, Mass., on the 18th was a northbound local passenger. It was moving at low speed on a sharp curve and the rear car was overturned. Three passengers were injured. The cause of the derailment was not discovered.

The train derailed near Waterbury, Conn., on the 20th was an eastbound freight. One brakeman was fatally injured. The cause of the derailment was the loosening of a driving wheel tire.

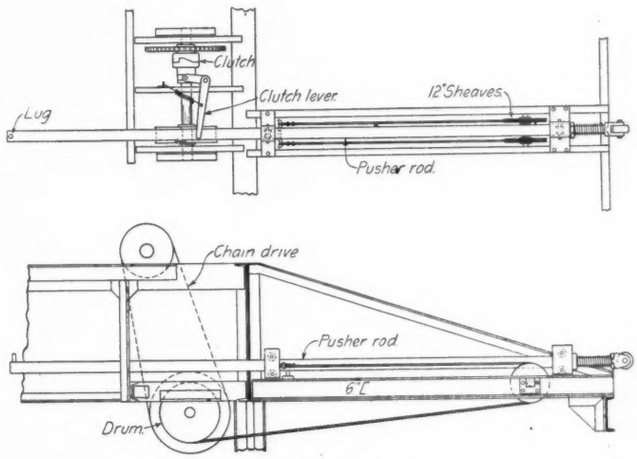
The train derailed on the Denver & Rio Grande near Grand Valley, Colo., on the 30th was eastbound passenger No. 2. Fve cars ran off, and three employees and six passengers were injured. The cause of the derailment is reported as undetermined.

LIFT BRIDGES AT A FREIGHT PLATFORM

The local freight terminal of the Atchison, Topeka & Santa Fe at Los Angeles consists of two buildings about 1,000 ft. long, separated by seven house tracks, interspaced with two transfer platforms of approximately the same length as the houses. As a means of greatly reducing the trucking distances, three power-operated transfer bridges have been installed to afford intermediate cross trucking movements which are made movable to permit the switching of cars on the house tracks. These bridges present an interesting departure in freight house operation and several ingenious engineering details have been worked out in their design.

The older of the two freight houses was built in 1907 and is 1,080 ft. long. One portion of it is 40 ft. wide and was used until recently as an outbound freight house. The other part is 60 ft. wide and was designed for an inbound house. The newer house was finished recently to serve as an outbound freight house, the entire old building being assigned to the inbound freight service. The new house is 800 ft. 9 in. long by 59 ft. 8 in. wide, with an automobile platform at the outer end of the same width and 149 ft. long.

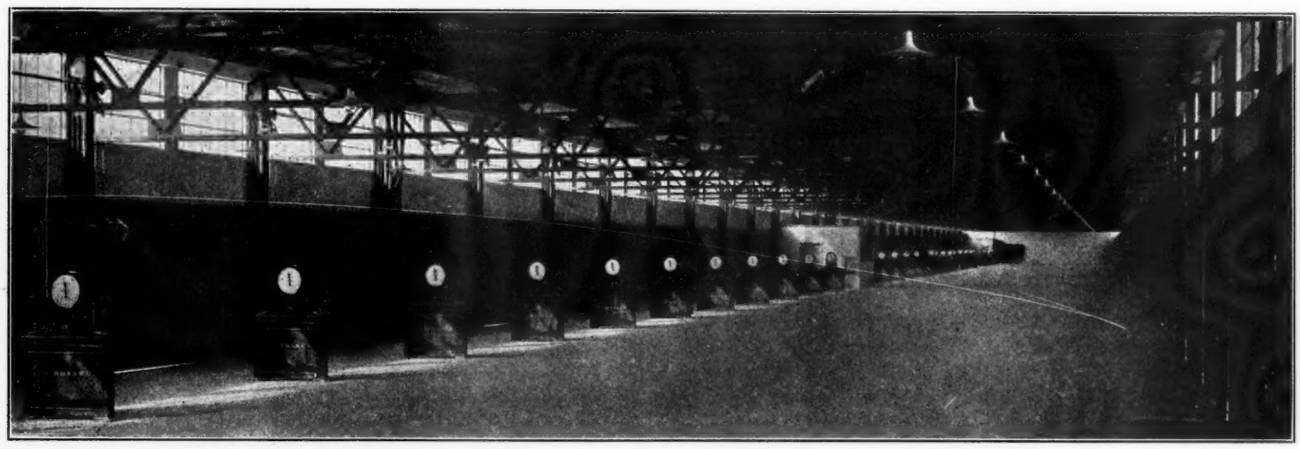
The seven tracks between the out-freight house and the in-freight house are divided into three groups by two platforms, each 16 ft. wide, there being three tracks adjacent to the new house, two between the two platforms and two adjacent to the old freight house. The house tracks come to a stub end on a line with the inner end of the freight houses and a cross platform connects the two longitudinal platforms and the two freight houses at this point.



The Pusher Mechanism

Owing to the great length of the layout, electric tractors and trailers were particularly applicable and have been installed, but in order to afford a material reduction in the trucking distances, bridges were installed at two points in the length of the station to permit cross movements of the trucks. These bridges were removed by hand each time it was necessary to switch the cars, a cut being made in the string of cars opposite each bridge when the cars were placed to allow room for the bridge.

The operation of these primitive bridges proved expensive and it was found that power-operated bridges could be installed at a considerable saving over the cost of operating the old ones. Two bridges have been installed as shown in the accompanying photograph to provide movable spans over the three groups of tracks at two intermediate points in the



Interior of New Outbound Freight House

length of the station. A third bridge has been provided over a single track in the throat of the yard. As shown, the larger structures each consist of a gallows frame of structural steel, spanning the center pair of tracks, and supporting the operating machinery from which the three drawbridges are raised or lowered.

The draw bridges are simple in design, consisting of structural steel beams carrying a plank flooring. The bridge over the three tracks next to the out-freight house has a length of 43 ft. 4 in. The other two bridges are 28 ft. 10 in. and 29 ft. 4 in. in length, respectively. However, a very simple device has been used to afford short span lengths, thus making it unnecessary to provide bridges of sufficient stiffness to span the full distances. Heavy sills have been placed on the center lines between tracks directly under these bridges to serve as bearings for swinging legs attached to the spans. When the bridges are down these legs serve as intermediate supports, thus cutting the spans to approximately 13 ft. When the bridges are raised the legs fold back against the under sides of the bridges and outside of the clearance lines.

The spans are raised and lowered by means of cables winding up on drums operated by 7½-hp. 3-phase, 60-cycle alternating current motors. Worm drives are used, thus avoiding the need of any system of brakes. One 7½-hp. motor operates the 3-track bridge; another motor of the same size operates the two smaller bridges simultaneously. Controllers are installed on one of the posts of the gallows frame at the platform level for the operation of the motors and automatic cut-offs are provided to stop the motors when the bridges are fully opened.

Unlike the usual bascule span, these bridges come to a true vertical position when open. Therefore the weight of the bridge is in no way effective to start it downward when it is desired to close the bridge. This becomes quite a formidable difficulty when a wind is blowing against the bridge in a direction opposite to that of the closing movement. On account of this difficulty, pushers were provided to push the bridges out a sufficient distance to make the weight of the bridge effective in carrying it downward and also to serve as buffers when the bridges are opened. The pushers for the two smaller bridges are operated by means of counter weights, both pushers and counter weights being clearly visible in one of the accompanying photographs. In the case of the larger bridge a motor-operated pusher was required.

This pusher is shown in the accompanying drawing, and its operation is simple. When the bridge is to be closed a drum in clutch with the motor operating the bridge winds up a cable and the pusher is forced outward. When the full reach of the pusher has been obtained a small lug on the end of the pusher rod comes in contact with the clutch lever and throws the drum out of clutch with the motor. Thus the pusher remains stationary during the remaining travel of the bridge. The operation is reversed when the bridge is raised.

The new freight house has a steel frame, consisting of bents 20 ft. center to center made up of two columns and a clear span truss, supporting steel purlins which carry the wooden roof. The freight doors occupy the full spaces between columns on both sides of the house and steel sash windows occupy most of the space above the doors, the small amount of wall space consisting of reinforced concrete curtain walls. Rolling doors are installed on the track side and cross folding doors on the team side. The doors fold outward rather than inward, thus saving space inside of the house and affording a canopy over the doors on the outside. At the inner end of the house there is a basement for a length of 200 ft. for storage purposes, this basement being of reinforced concrete construction. The house is equipped with twenty-six three-ton scales and four six-ton scales placed adjacent to the team side doors. Each scale is provided with a Fairbanks automatic dial, graduated to the full capacity of the scales. The automobile platform is provided with a six-ton scale with a 7¾-ft. by 16-ft. platform.

The Lift Bridges Open

The bridges were installed under the general direction of G. W. Harris, chief engineer of the Santa Fe coast lines. The design of the freight station was under the direction of E. A. Harrison, and the design of the bridges under the direction of A. F. Robinson, architect and bridge engineer of the Santa Fe system, respectively. A contract was let to C. H. Norwood, Chicago, who furnished all the structural steel and electrical equipment, and also designed the operating machinery.

Railway Regulation Causes Locomotor Ataxia*

Lack of Co-ordination and Fairness in Present System Does Great Harm—National Control the Remedy

By Frank Trumbull
Chairman, Chesapeake & Ohio Railway

I SHALL not weary you with figures or with platitudes about what you do for the railroads or what they do for you. The fact that you have invited a representative of the railroads to address you, evidences sufficiently the mutual welfare and regard of shippers and carriers. Neither shall I apologize for the railroads. There has been a great deal of critical comment about exceptional instances of railway administration, but if you will put it all together you will find it relates to less than 10 per cent of the mileage of the country, and that it has very much exceeded in volume and sound the praise bestowed upon the other 90 per cent. Railway administration of today in this country is as honest as any other business. Notwithstanding this, railway directors and officials accept the principle of regulation because railway companies are public service corporations. Discriminations and unreasonable practices by such corporations are and ought to be forbidden by law. Discriminations by individual states against the commerce of other states and unreasonable requirements ought also to be done away with by some better method than tedious litigation. Obviously, any adequate scheme of regulation ought to deal not with 10 per cent of the roads or with 90 per cent, but with all of them, and no regulation can be adequate that is not unified and consistent.

I might entertain you with a long history of various attempts at regulation, commencing with the so-called "Granger laws," followed later by the Interstate Commerce law, enacted 29 years ago, and both in turn followed by hundreds upon hundreds of statutes enacted by federal and state governments. But it is sufficient for this occasion to say that these endeavors, due to a variety of motives, have, after establishing general principles, all been of a piecemeal and patchwork character; court plasters, not blood remedies. Railway legislation has been more conspicuous for quantity than for quality, and "legislation" and "regulation" are not synonymous terms.

It is true that much progress has been made. For example, in the so-called Eastern Rate Case the Interstate Commerce Commission made, in December, 1914, the following declarations of principle:

> That there is in this country a fundamental need of adequate transportation facilities.
>
> That such facilities during the continuance of present economic conditions can only be had by means of private capital, combined with private enterprise.
>
> That private capital can only be obtained by the hope and realization of fair and reasonable return.
>
> That to produce such return, freight rates may be raised, when it is shown that existing rates as a whole, considered regionally in this case) yield inadequate revenue, and that the higher rates proposed would be reasonable.
>
> That such reasonable passenger fares may be charged as will yield a fair return on the property devoted to passenger use, and, further, that in general each class of service, including the mail and express, should contribute its just proportion to the total economic cost of operation.
>
> That in determining reasonable rates, interest upon railway debt is not a factor and will be discarded.

This last has mightily clarified a thing about which there has been much confusion of thought and even more confusion of tongues. The fact is that bonds and stocks indicate only the ownership of property, and are not the property itself which is used by the public. This is simply a corollary to the long established principle that if railway companies take private property for public use, they must pay its reasonable value, regardless of how the previous owner acquired it or paid for it.

However, almost immediately after this decision was handed down, one state made an order reducing rates which, if sustained by the courts, would take away several million dollars per annum of the benefits derived at Washington.

Various state rates and practices could not be changed to conform to the recommendations of the commission; payments by the postoffice department were still outside the commission's jurisdiction; all the states were at liberty to make requirements which in one way or another changed the net revenue of the roads. All of which illustrates the real helplessness of the Interstate Commerce Commission actually to "regulate." Clearly, something was still lacking.

Let us get down to fundamentals; back to the intent and real meaning of things. If you will look at Webster, you will find these definitions of the word *"regulate"*:

> "To adjust by rule or method."
>
> "To put in good order."
>
> "To adjust or maintain with respect to a desired condition."
>
> "To regulate a watch or clock, to adjust its rate of running so that it will keep approximately standard time."

The carriers and the public have suffered because they have not really obtained *regulation* according to the intent and meaning of that much-used word. Don't take my statement for it, but let me read to you an extract from a recent report of the House Committee on Interstate and Foreign Commerce upon a resolution providing a joint committee of inquiry into the whole problem of transportation—similar to the Aldrich Monetary Commission—a resolution which has already passed the Senate and is expected soon to pass the House:

> "Since the approval of the act to regulate commerce in 1887, the system has had a gradual and irregular growth by various and sometimes sporadic amendments, some of them making decided, if not radical, changes in the original plans and policies, and some of them adding new and important activities. So that the entire law to regulate commerce now in force is not a uniform, compact, symmetrical structure easily understood, but is an incoherent growth, sometimes inconsistent, in some parts hardly reconcilable, and, to say the least of it, the diversities and incongruities should be carefully considered and wherever possible unified and improved, to the end that the federal regulation of carriers may be successfully carried on with the best possible service to the public. . . . It is the earnest hope of every member of your committee that the investigation, if ordered, shall be directed to the detection of defects in the system, the establishment of truth as to the best way to remedy these defects, and the perfection of the system for the increased convenience and prosperity of the people in every way that human legislative wisdom can accomplish perfection in anything."

In addressing Congress on December 8, 1915, President

*An address delivered before the National Hay Association at Cedar Point, Ohio, on July 12, 1916.

Wilson, in recommending such a committee, said among other things about transportation:

> "It is obviously a problem that lies at the very foundation of our efficiency as a people; it is the one common interest of our industrial life."
>
> "The question is whether there is anything else we can do that would supply us with effective means, in the very process of regulation, for bettering the conditions under which the railroads are operated and for making them more useful servants of the country as a whole."

You will perceive that I am not giving you my own views, but those of great leaders of thought in this country. Senator Underwood, of Alabama, said in an address at Chicago, on February 4, 1916:

> "We must recognize that the man who is willing to invest his money at a moderate rate of interest in railroad securities is not exploiting the public but is a public benefactor."
>
> "We must solve the problem along lines of private ownership and Government regulation. We must consider the wisdom of substituting one master for the forty-nine masters that regulate our commerce today."

Colonel Roosevelt and Mr. Taft have made almost identical statements in clear and unmistakable terms, and Mr. Hughes said immediately after his nomination:

> "We must rescue our instrumentalities of interstate and foreign commerce, our transportation facilities, from uncertainty and confusion. We must show that we know how to protect the public without destroying or crippling our productive energies."

The "Locomotive Engineers' Journal," official organ of the 75,000 railroad engineers, said not long ago:

> "The railroads are almost wholly interstate in character, and it requires little thought to realize how unsatisfactory and unbusinesslike it makes the conditions for the railroads with a commission in every state demanding all sorts of conditions from the roads.
>
> "The great thoroughfares should have one boss, instead of forty-nine, and the rate making should be done by one factor of the Government, so that a survey of the whole territory may be before them, when all the varied conditions can be readily seen, and rates made that are just, both to the shipper and the railroads.
>
> "No other kind of business could live under such unknown and unfixed conditions."

The Massachusetts Public Service Commission, in reporting not long ago on the New Haven road, after an exhaustive inquiry, made this statement:

> "The whole legal question is so difficult, so entangled and confused by conflicting claims and rights, that it raises serious doubts as to the wisdom of the system from which it arose. No man can serve two masters. Is there public advantage in compelling a corporation to serve three or more? A system under which a single undivided corporation is at the same time three separate corporations is wholly illogical and seems contrary to good order and reason."

Formerly, wages and rate matters were dealt with in a rather lawless way by shippers, employees and individual roads, but in the last few years there has been an evolution; both wages and rates have been considered regionally, and now, for the first time, the train service employees are insisting that their wages shall be considered on a nation-wide basis. Industrial and commercial bodies all over the country, recognizing the great need for unified and more efficient regulation of transportation, have passed significant resolutions during the present year calling upon Congress for investigation and relief. The Merchants' Association of New York, the Chamber of Commerce of Philadelphia, the National Manufacturers' Association, the National Lumber Dealers' Association, the Southern Pine Association, National Leather Association, American Hardware Manufacturers' Association and many similar organizations of wide influence in the business world have expressed themselves vigorously to this effect.

So under our very eyes this thing has come to pass. Men of all classes and of all shades of political opinion are declaring that the transportation question is a national problem —not a local issue.

Now, if you and other shippers, and the people who travel in passenger trains, or who receive mail and parcels post carried by the railroads, and railway directors and officials, are all agreed that the propriety of regulation is no longer in dispute, surely all of us together ought to be able to search our hearts, ascertain our paramount duty, get down to business and discuss the whole question from the standpoint of the public interest.

We may, therefore, ask ourselves:

Is it in the public interest that the railroads of this country are required to make over two million reports per annum to various federal and state tribunals?

Is it in the public interest that passenger rates are only two cents a mile in some states and higher in more populous states? And in considering this question will not the most obvious thing to the public be the cost and comfort of the passenger equipment of today as compared with twenty years ago?

Is it in the public interest that wagon-loads of testimony are submitted to various state tribunals to prove that rates ought to be higher, resulting in refusals, after a corresponding laborious inquiry by the Interstate Commerce Commission, the result of which was a finding that interstate charges ought to be increased and that passenger traffic is not paying its share?

Is it in the public interest that some states pass extra-crew laws while other states are refusing to pass them?

Is it in the public interest that one shipper—the postoffice department—determines compensation to the railroads without submission to the Interstate Commerce Commission when other shippers are deprived of such a privilege?

Is it in the public interest that public service corporations are required by divided authority to violate the spirit, if not the letter, of Section Two of Article Four of the Constitution of the United States, which declares that "The citizens of each state shall be entitled to all privileges and immunities of citizens in the several states."

Is it in the public interest that public tribunals have said in some cases that rates by one line may be higher than another because the cost of operation is higher, thereby penalizing superior location and construction? If so, what incentive is there to build better roads, or improve existing roads?

Is it just that wages of steel workers, coal miners and others are voluntarily increased by employers and these increases then passed along to the consumer, including the railroads, unless similar flexibility be accorded to railroad investors and nearly two million employees? If not, what is the alternative?

Besides innumerable things like those mentioned are confusing anti-trust laws of various states as well as the federal government, which seem to most students of railway economics to be superfluous, when superimposed upon minute regulation and to interfere with that very desirable thing—low cost of production. Then, too, think of the time of shippers and railway officials devoted to attendance upon various tribunals. In consequence of all these wasteful things, millions upon millions of dollars which ought to be saved for *somebody,* are going over the dam every year, and warrant the query whether there is any more wisdom in disembarking railroad corporations at state lines than there would be in disembarking passengers and freight or changing wages at state lines. Who, for example, would think of advocating a postoffice department for each state in the union? Is it not your duty and mine to cut out waste wherever we can, no matter how prosperous we may be?

The net results of conditions such as I have enumerated, is that individual states are actually regulating interstate commerce and are shifting to other states burdens of railway credit which the latter ought not to assume, and in reality are requiring railway corporations to do what the federal law prohibits them from doing—that is, to discriminate between persons and places.

The fact is, we haven't had "regulation" at all. It is locomotor ataxia. If you will look again at the dictionary,

you will see locomotor ataxia described as "A disease of the spinal cord characterized by peculiar disturbances of gait, and difficulty in co-ordinating voluntary movements."

Surely Webster must have had the railroads in mind when he wrote that! The federal government may be likened to the spinal cord of our political system. Congress can, and should—without any constitutional amendment—act in these matters in behalf of all the states and "co-ordinate" the railroads. The small number of people who would be thrown out of political employment are as nothing in the balance to the millions who would be benefited. In fact, state public service commissions would still have quite enough to do in supervising street car lines, lighting companies, water companies, etc. Any fear of too much centralization could be easily overcome by regional commissions. If we can mobilize the strength of the banks regionally, why not also the railroads? The *people* of the states would be better served and better protected. The *people* care nothing for state lines on the map, or for theoretical state rights, when they want to do business.

Not long ago I heard an after-dinner speaker say: "The railroads must be taken out of the field of speculation." I do not know just how this is to be accomplished, unless by government guarantees, but certainly the business ought to be relieved of the speculative risks of conflicting treatment by public authorities.

Railway investors are quite willing to take their chances with the other people of this country. They do not have any problems, except so-called regulation, that you have not. You have your puzzles about wages, about fluctuations of crops, of demand and supply and many other things. The railroad investor takes "pot-luck" with you, but is timid, even in prosperous seasons, about the one thing with which he has to contend and with which you do not; that is, artificial and uncertain limitations on profits. He is quite willing to have supervision of railway securities, but, naturally, thinks that the machinery should be simple and prompt and the federal government should act in behalf of all the states in regulating the instrumentalities of commerce. At present nineteen states are trying to regulate the issuance of securities, and no two of the regulations are alike. If you were a banker, how long would you, with present opportunities for making money, tie up your funds or your customers' funds, waiting for "consents" of various tribunals, some of which impose a heavy special tax on this "privilege" of devoting money to public use, although the proceeds of the securities may be largely spent in other states?

No railway regulation can really put the machine "in order" that does not comprehend the question of railway credit. Facilities must, of course, precede service, and credit must precede facilities. Our railroads should always be ahead of, not behind, the growth of the nation. In this connection, may I bring to your attention just one graphic statement? The debt of the railways of this country is now, roughly speaking, about eleven billion dollars. The stock amounts to about seven billion dollars. Now, how long would your bankers do business with you if you were attempting to permanently borrow eleven dollars for every seven you put in the business yourself? Millions of people are as dependent upon weak roads as other people are upon the strong ones. For example, take the southwest. A large part of its railroads are in bankruptcy. Surely that is not all due to bad management. How much of it is due to unwise regulation, how much to unsound laws about financing, and how much to other things? Could any congressional action be of greater service than to do whatever is necessary to safeguard and strengthen railway credit?

Railway returns for the fiscal year just ended were equivalent to about 5½ per cent on the property used by the public —surely not exorbitant. Is there any prosperous private business in the world that yields so small a return? In 1913 the return was about 5 per cent, in 1914 about 4 per cent, in 1915 about 4 per cent. I am speaking of the railroads as a whole; not even a unified regulation can be successful if it is not to make weak roads healthier and more serviceable, nor can it be successful if based on returns of prosperous years only.

In no business is it conservative to draw out every year all of the profits. How long would your bankers be cordial if you were to withdraw every year all of your gains, instead of building up reserves or adding to the real value of your assets? I have said that I am not here to apologize for the railroads, neither am I here to boast, but perhaps I may give you one illustration: The average passenger train in this country earns for carrying passengers, mail, express and parcels post about $1.40 per mile. The average equipment of locomotive and cars provided for this probably weighs about 500 tons per train and is projected through space at a speed varying from 20 to 60 miles per hour. That is to say, a five hundred ton train is projected twelve miles at high speed for the price of a ton of hay. Do you happen to know of any equivalent service for less money? Let me also quote from a recent statement of W. M. Acworth, a distinguished English writer on railway economics. He said:

> "This is my tenth visit to the United States, of whose railway affairs I have been for about thirty years a diligent student. Every time I am brought into contact with American railways, the overpowering impression produced on my mind is of the marvelous results which the efficiency of the railroad men produces with the minimum expenditure both of capital and income."

A very helpful American writer has said:

> "A nation is made great not by its fruitful acres, but by the men who cultivate them; not by its great forests, but by the men who use them; not by its mines, but by the men who work in them; not by its railways, but by the men who run them. America was a great land when Columbus discovered it; Americans have made of it a great nation."

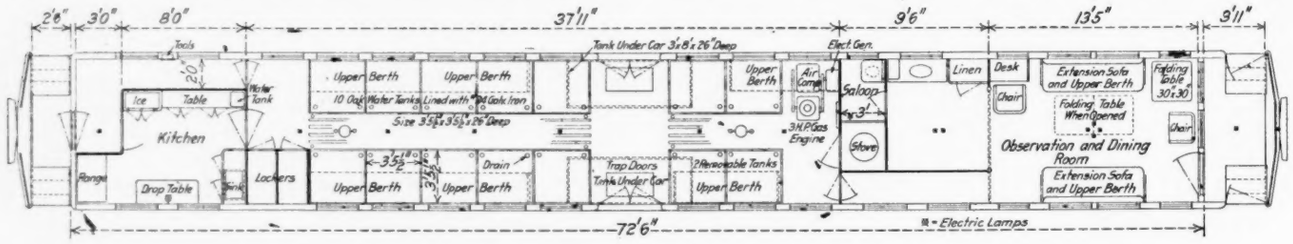
We are a great nation, not a federation of tribes. Never before has there been such a national consciousness. We should be as proud of prosperous railroads as of prosperous banks; we must have both if we are to keep pace with the great expansion ahead of us, to say nothing of our normal growth. The opportunity of this generation—your opportunity and mine—is to serve our country by promoting national unity. The paramount "state right" is to be part of the union. Nothing will promote national unity more than unified and consistent regulation of transportation, which, as President Wilson has said, is "*the* one common interest of our industrial life." It is a fascinating task, and it is most gratifying that all the multiplying signs of mutual friendliness and appreciation are so propitious for its accomplishment.

British Locomotive Exports.—The value of the engines shipped in March was only $350,000, as compared with $1,200,000 in March, 1915, and $1,250,000 in March, 1914. The value of the exports to March 31, this year, amounted to $1,650,000, as compared with $3,800,000 in the first quarter of 1915, and $6,000,000 in the first quarter of 1914.

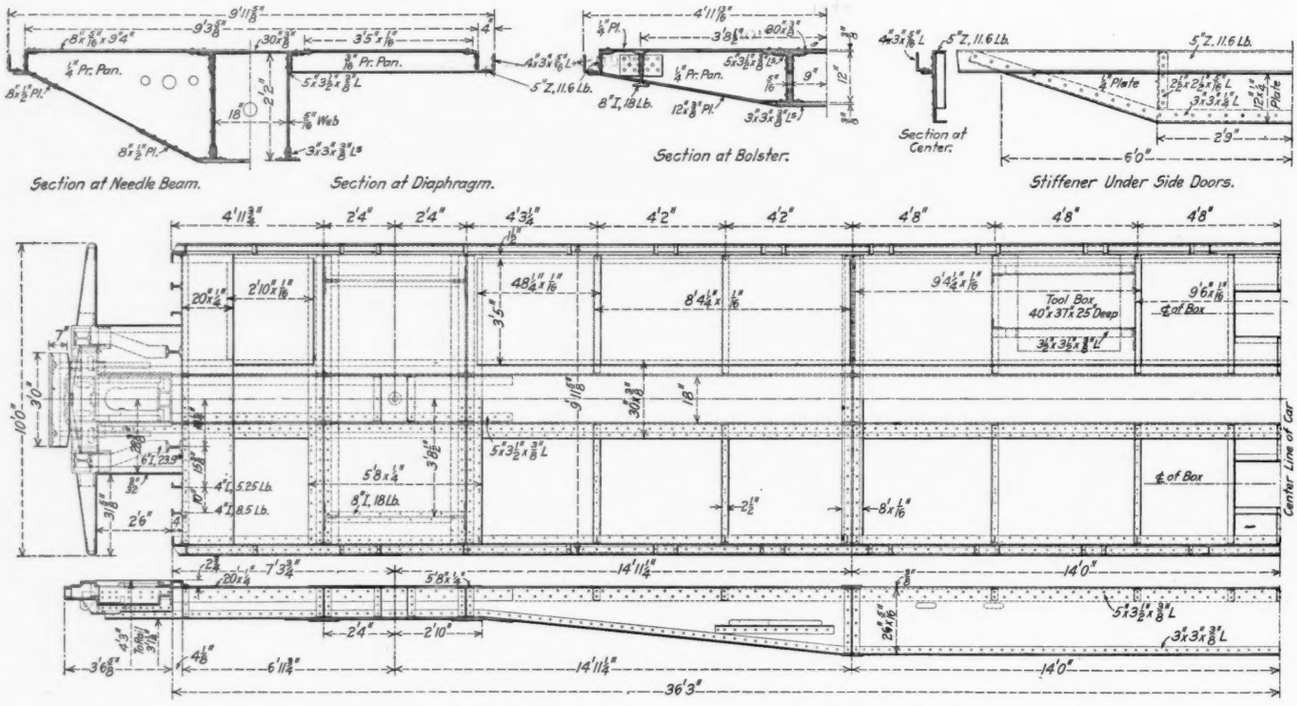
Utilizing Spoiled Munitions.—At the outbreak of the present war, many manufacturers went into the munitions business without definite ideas as to the requirements of this work. Consequently a large amount of material was spoiled or made in such a way that it would not pass inspection. One concern lost over 5,000 18-lb. British cartridge cases, but a novel use was made of these cases. They were placed in a punch press and smashed down so as to form a shallow cup. Soldered on the edges of this cup were two small curved holders which converted the cartridge case into a very satisfactory and attractive cigar and ash holder. The result was that the spoiled cartridge cases sold for a higher price in this form than they would have if sold for munition purposes.—*Machinery.*

CAR FOR THE TRANSPORTATION OF LIVE FISH

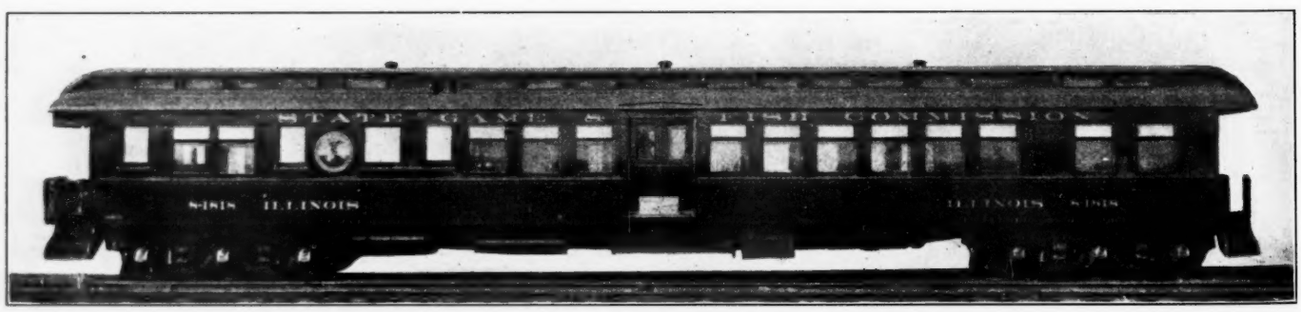
The McGuire-Cummings Manufacturing Company, Chicago, recently completed for the Illinois State Game and Fish Commission a car for use in the transportation of live fish. It is of steel construction with interior finish of plain sawed oak, with the exception of the wainscoting which is of steel. It is 72 ft. 6 in. long over end sills, 81 ft. 2 in. long over platforms and the trucks are spaced 57 ft. 10½ in. between centers. The weight of the car is 139,100 lb. The center sills are of the built-up fishbelly type; the web plates are 26 in. deep at the center and 12 in. at the ends and are 5/16 in. thick. The top chord of the member is a 5 in. by 3½ in. by ⅜ in. angle and the bottom chord is made up of two 3 in. by 3 in. by ⅜ in. angles running the full length of the car body. There is a top cover plate running the full length of the car, 30 in. wide by ⅜ in. thick. Each side sill is a 4-in. by 3-in. by 5/16-in. angle and a 5-in., 11.6-lb. Z-bar riveted together. The body bolsters are of the built-up type and have a top cover plate ¼ in. by 68 in. extending the full width of the car body. The floor plates are 1/16 in. sheet steel and there are also two pressed steel cross-bearers.



Floor Plan of the Illinois State Game and Fish Commission's Fish Car



Arrangement of the Underframe of the Illinois State Fish Car



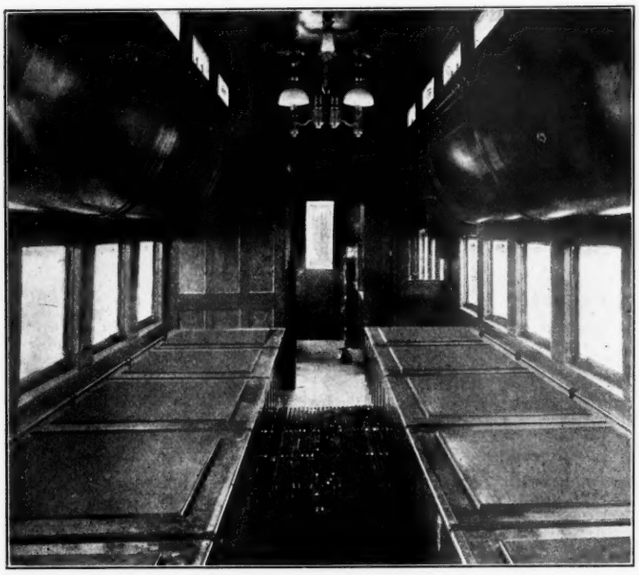
Car for Use in Live Fish Transportation

In the body framing the side sill forms the bottom chord of a girder whose web member is a plate 3/16 in. by 34⅜ in.,

extending the full length of the car body, while the top chord consists of a 4 in. by 1⅜ in. by 7/16 in. dropper bar. The side plate is a 4-in., 8.2-lb. Z-bar and the posts are of pressed steel, ⅛ in. thick by 4 in. wide. The floor is insulated with Flexolith and the insulation in the superstructure is Woolbestos. Agasote, ¼ in. thick, is used in the interior in the upper deck and the same material 3/16 in. thick in the lower deck. The trucks are of the 6-wheel type with 10 ft. 6 in. wheel base, 36 in. rolled steel wheels and 5 in. by 9 in. journals. The heating is provided for by stoves, no interior steam piping being applied, and the car is fitted with living accommodations.

The car is equipped with an aerating and water circulating system for the purpose of keeping the water in proper condition in the fish tank to keep the fish alive while in transportation. This is accomplished through a system of reservoirs and piping. There are 16 fish tanks, each one being connected with the system and having an overflow drain whereby the overflow water circulates to the receiving tank located underneath the car which has a capacity of 200 gallons.

There is also a tank placed in the roof of the car of 240 gal-



Interior of the Car, Showing the Fish Tanks

lons capacity which is the main reservoir for the system. The water is fed from this tank into the fish tanks as required, then out of the fish tanks through the overflow into the receiving tank below the car, and when the receiving tank is filled it automatically empties, the water being forced out of this reservoir by air pressure to the storage tank in the roof of the car.

The plant consists of a gasolene engine of 3 hp., and an air compressor of a capacity of 8 cu. ft. of free air per minute. The air reservoir is a high pressure tank 2 ft. by 5 ft., carrying a pressure of 80 lb. The circulation is automatically controlled by a float in the receiving tank which in turn is connected with electric contacts that operate an electric valve, cutting in the air when the receiving tank is full and cutting it out when the water is displaced.

The car is also supplied with its own electric plant for furnishing 22 lights in the car and also for furnishing power for operating the switches for the water circulating system. The generator is driven by the gasolene engine, with storage battery service. The storage battery is capable of thirty-six hours' service in operating the lights, etc., with the plant idle.

"POSITION LIGHT" SIGNALS ON THE PENNSYLVANIA

The drawing printed herewith shows the standard aspects and indications of the position light signals, block and interlocking, giving indications to trains both night and day by uncolored lights, which are now in service on the Pennsylvania between Overbrook and Paoli, on the Philadelphia division, and to be installed on the New York division from West Philadelphia to North Philadelphia when that section of the line is electrified.

These signals have now been in use nearly a year and a half. When they were first put in, and as they were described in the *Railway Age Gazette* of January 8, 1915, page 61; February 26, 1915, page 366; and March 5, 1915, page 404, each signal had two rows of lights burning continuously, the arrangement being made to correspond with a semaphore with two arms; but the scheme has now been simplified so that as shown, for example, in aspects 12, 13, 14, etc., only one signal or row of lights need be burning. In series with the upper row of lights there is a low resistance relay which, through its contacts, controls the circuit energizing the second row; so that, if the upper row should accidentally be extinguished, the circuit of the second row would be opened, extinguishing that also. Thus there is no danger of giving a false indication by the lower lights when the upper row has been put out.

It will be noticed that aspects 1, 12 and 20 are identical; and also, in the same way, 2, 14, 17 and 22; 3, 18 and 25; 4, 15, 19, 21, and 24 are identical. The same is true of 13 and 23; and thus there are, in all, only fifteen aspects to provide all the indications required for scheme No. 3 of the Railway Signal Association.

Aspect No. 16 may be changed at will to 12; that is, a Stop-and-Proceed may be changed to Stop-and-Stay, and vice versa. Where an automatic signal is used as a hold signal for train orders, the operator, on throwing his office switch to set the signal, opens the circuit of the single fixed light (which is the mark of a Proceed-after-Stopping signal) and, when he throws his switch back to clear the signal, it becomes again an automatic signal. Some signals are now being intalled with this arrangement. A take-siding indicator (No. 26) is also to be installed. This will be mounted on a mast by itself and will have lamps 12 in. apart, on centers, with a background 3 ft. square. It will be lighted only when in use.

It will be noted that the backgrounds of Nos. 1, 2, etc., appear unduly large. As a matter of fact, in the construction, aspects 12 to 25, inclusive, will have their own backgrounds of various shapes, depending on the number of positions displayed. All backgrounds will be made as small as practicable, thus reducing the wind pressure on the structure.

The fixed light in aspect No. 16 is mounted in front of the mast, and, as only one horizontal row is ever displayed, except on the interlocking signals, it is intended to use a short mast, R. S. A. standard.

Two signals have been put in service, protecting a single-track tunnel, which are lighted up by the approaching train. On these, for a period of four months, no adjustments or repairs were made; there was neither a failure of any kind nor a lamp renewal. Batteries (caustic soda) continued in first-class shape; the plates showed practically no signs of wear, and there was only a slight sediment in the bottom of the jar. The maintenance of these signals consists of inspection trips which, on account of distance from headquarters, consume three hours each. Several trips were made in January; two in February and two in March, at a cost in the latter two months of 80 cents per signal per month. The first and only failure so far occurred April 26; trackmen dragged cinders over the track and caused a short circuit, resulting in one

signal showing stop when it should have been clear and the other remaining lighted for about three hours. The normal time which these signals are lighted is one hour in twenty-four.

From a report made by Signal Engineer A. H. Rudd, it appears that the results from the operation of this type of signal have been very satisfactory. The number of failures of all kinds has been greatly reduced, and by doing away with all moving parts except the control relays the chance of false clear signals is reduced to a minimum. The enginemen are practically unanimous in their approval of the signals; and they say that the lights can be seen better in fog and in snowstorms than any other signals. The number of signals on a railroad may be reduced, as compared with the older types, because four aspects can be given with each signal, whereas other types afford only three. With the additional aspect it is sometimes practicable to use fewer signals. With colored lights only three colors are available, and with the semaphore arm only three aspects can be used, for all must be given in one quadrant. The arm cannot be moved from the lower to the upper quadrant without having it momentarily show stop.

These signals are lighted by alternating current. This is the ideal plan and is of course available at all places where electric propulsion is used. To light these signals continuously from a primary battery would, ordinarily, involve undue cost; but on lines of light traffic this source can be used, as the signals can be arranged to light up on the approach of a train and to go out as the rear of the train passes.

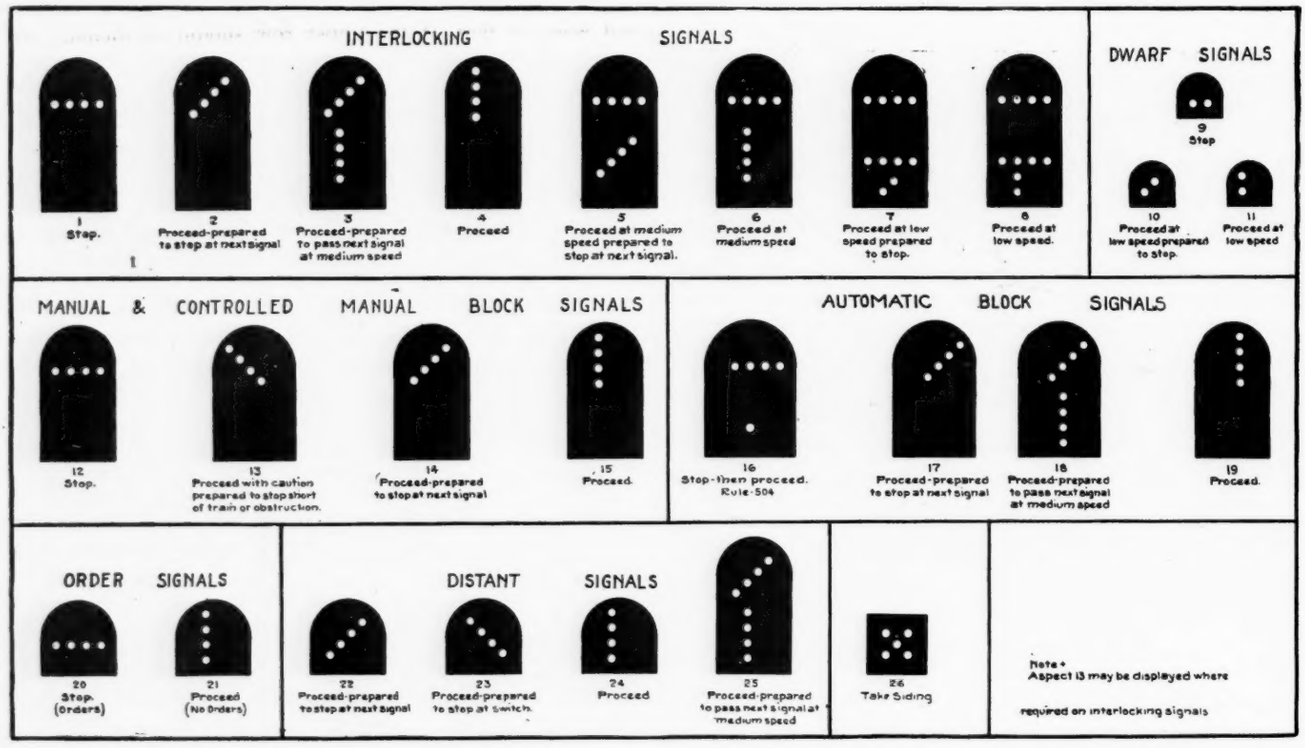
The signal installation from Overbrook to Paoli, about fourteen miles, cost approximately $355,000, including part of the cost of power house and of costly ducts for carrying wires underground, but excluding the new track bonding required in connection with electric propulsion. The cost also includes some changes that were made in interlocking. The signal locations were changed so that ninety automatic signals now take the place of the 110 signals formerly used.

Taking into account all elements, Mr. Rudd estimates that the average cost of a block section with a four-track automatic signal bridge, including signals and all fittings complete, is $10,071.22; with the least expensive semaphore a similar installation would have cost $10,633.07. This shows a saving per block section of $561.85; per signal, $140.46; and for the ninety signals, $12,641.40.

This saving of $12,000 would be greater on another installation, as a number of details could be left out. Moreover, the new standard aspects, now shown, if they had been adopted at first, would have lessened the cost $4,500. In short, the system as now developed will cost $1,100 a mile less than was the case eighteen months ago.

Mr. Rudd, because of his part in designing and developing these signals, classes himself as prejudiced; but he says that many of the officers of the road look to see light signals take the place of the movable arm for general use where semaphore signals would be operated by electric or pneumatic power.

In his report Mr. Rudd gives an interesting sketch of the development of the light signals. Experiments were first begun in the early part of 1914, Mr. Rudd's principal assistant being C. E. Goings. The glass was developed by Dr. William Churchill, of the Corning Glass Works, Corning, N. Y. The first signals were put in service February 14, 1915, and the first patent was issued March 14, 1916. A number of patents are still pending. All of the men who participated in the invention pooled their interests and licenses have been issued to the four principal signal companies. The Union and the General companies are prepared to fill orders. A long series of experiments had to be made to get rid of the glare of the sun on the lamps, which, under favorable conditions—favorable to the sun, not to the railroad—would illuminate the whole of the signal so that the lighted lamps were indistinguishable from those which were not lighted. On lines running east and west the lights for west bound movements were troublesome at sunrise, and those for east bound movements developed the same condi-


INTERLOCKING SIGNALS
1 Stop.
2 Proceed-prepared to stop at next signal
3 Proceed-prepared to pass next signal at medium speed
4 Proceed
5 Proceed at medium speed prepared to stop at next signal.
6 Proceed at medium speed
7 Proceed at low speed prepared to stop.
8 Proceed at low speed.
DWARF SIGNALS
9 Stop
10 Proceed at low speed prepared to stop.
11 Proceed at low speed
MANUAL & CONTROLLED MANUAL BLOCK SIGNALS
12 Stop.
13 Proceed with caution prepared to stop short of train or obstruction.
14 Proceed-prepared to stop at next signal
15 Proceed.
AUTOMATIC BLOCK SIGNALS
16 Stop-then proceed. Rule-504
17 Proceed-prepared to stop at next signal
18 Proceed-prepared to pass next signal at medium speed
19 Proceed.
ORDER SIGNALS
20 Stop. (Orders)
21 Proceed (No Orders)
DISTANT SIGNALS
22 Proceed-prepared to stop at next signal
23 Proceed-prepared to stop at switch.
24 Proceed
25 Proceed-prepared to pass next signal at medium speed
26 Take Siding
Note+
Aspect 13 may be displayed where required on interlocking signals

Standard Aspects and Indications as Given by "Position-Light" Signals on the Pennsylvania Railroad

tion at sunset. These difficulties were present only for two or three weeks twice a year, when the sun, on its journey north or south, shone on the lights at just the right angle to produce the effect mentioned. On lines of railroad running north and south this difficulty does not exist. The filaments of the lamps are very small and delicate and have to be focussed with great precision. By repeated changes in this feature and in the position of the lens, with the addition of a reflector to more surely throw the rays downward, for the benefit of enginemen close to the signals, the trouble was satisfactorily overcome. Careful provision had to be made for the short distance view, because the signals, being fixed on the overhead bridges supporting the electric wires for propulsion, are about forty feet above the track. For dwarf signals, which need not be visible more than about 1,000 feet, the lamps are "frosted" by the use of chiffon.

THE WAR WEARING OUT IMPERIAL TRAINS

By Walter S. Hiatt.

Our Special European Correspondent.

Among other railroad material that is being worked overtime now because of the European war may be mentioned the palatial trains of the Emperors of Russia and Germany, the King of Italy, and that of the President of the French Republic. These trains have never been in service so frequently before.

Indeed, it is likely, should the war last many months longer, that the train of the President of the French Republic will have to be rebuilt. It is a war order that some enterprising American car builder may keep in mind. The train was about to be rebuilt when the war started but the shorthanded conditions in the French car factories have not permitted the work to be carried out.

This train, while not the most luxurious and convenient of the official trains of Europe, has perhaps the most interesting history of them all. It has figured in more important political events than any of the others, and has carried at some time nearly all of the great men of the world, including, possibly, France's greatest enemy, the Emperor William himself. The train was hurriedly built in the autumn of 1896 for the immediate purpose of receiving the unexpected visit of the Czar of all the Russias, whose visit at this time cemented and put the official seal on the alliance between France and Russia, the most portentous political affair possibly in the whole history of modern Europe. The French wanted, as is their custom, to celebrate this visit themselves and to welcome their visitor with every possible honor. It was on this occasion, for example, that the trees of the Champs Elysees were decorated with hundreds of thousands of flowers, artificial flowers to be sure, owing to the lateness of the season, but yet flowers.

For the same reason the then most palatial of trains was built to carry the emperor from the frontier to Paris. Its four cars were built in 13 days at the order of President Felix Faure, and incidentally without the legal sanction that ordinarily must accompany such expenditures. This sanction was formally granted long after the emperor had gone home. So hastily was the private personal car of the four built that it was not recalled until the tenth day that the emperor might want to take a bath. So the roof of the car was promptly cut open and a space made large enough to permit the lowering of a huge bath tub into a corner of the car, not an ordinary bath tub, but one of solid silver. The tub is there after all these years, as is the patch in the car roof. I was at pains to note it when visiting the cars. This train has its own great special housing shed at Villeneuve St. Georges, some miles out of Paris, though it has been as frequently out as in that shed this year.

In October the train was used to convey the King of England to the French front where he reviewed in company with President Poincare 50,000 of the troops that had taken part in the victory of late September about Rheims, the victory today known as that of the fields of Champagne. Although the review took place but 12 miles behind the front, neither the King of England, nor the troops, nor the train was bombarded by the Germans, for the simple reason that the Germans did not know the place where the review was being held.

The train was used late in August for the purpose of conveying the King of Belgium to Paris. It was on this occasion that the king lost his suspenders, or rather, being used to a soldier's life and uniform, he forgot to put them on the morning he left the train after his night ride from Paris back to the northern front.

The ceremonial train of the French Republic differs from the Imperial trains in that it is not armored, and has no protection whatever against bullets and shells. It was built at a time when such trains had neither been conceived nor thought necessary. All of the four cars are elaborately upholstered in red and yellow silk velvets, and all are of wood construction, each 40 tons in weight. The cars are not at all of the typical French construction, but look rather like the massive American Pullman parlor car, except that the roofs are not fully rounded at the car ends. The interiors of the cars resemble somewhat the inspection or tourist cars used on the western railways of the United States, and have none of the abrupt divisions and cross compartments peculiar to the English or continental cars. While thoroughly comfortable, however, it is apparent by their fading curtains and upholstering, by their too palatial parlors, by thei · clumsy and ponderous arrangements which can no longer be called conveniences, that they have outlived their time and usefulness. They vaguely remind one of the old palace at Oiron, whose magnificence is falling into decay because no one can afford to live in the place.

In sharp contrast is the Imperial train of Germany which conveys the Emperor William to his several battle fronts. All of the seven cars of the train are partially armored, with bomb-proof bottoms and tops. When the train is run near the front it is pulled by one of the many armored locomotives now so common in France and Germany, a locomotive prepared to resist not only aeroplane bombs but cannon shell, a locomotive whose armor reaches down to the tracks and curves sharply upward until it resembles a land Merrimac.

A feature of the train is the library car in which is hung up a multitude of military maps, more than 700, for the study of the operations of German and enemy troops. Of course the train has its special telephone which can be connected at any station.

The special train of the Emperor of Russia is the most luxurious and longest of them all. It is composed of a dozen cars and is often run in two sections. It was adapted to war uses long ago, before the present conflict was thought of, its top, bottom, and sides being heavily armored and proof against dynamite charges planted on the tracks. Some of the cars are set aside for the Emperor's suite and guard, in others provision is made for a real Russian bath, a real kitchen, a smoking saloon and every comfort that the emperor might find in one of his own great palaces. There is also a chapel for worship and religious services.

Despite the many journeys now being made in these special trains, and the vigilance and effort of the enemy aeronauts, none so far has actually been injured during the war. Granting that all of them escape destruction, it is pretty certain, in view of the rapid wear and tear of train operation at the present time, that after the war the nations owning them will have to foot new bills for other official trains.

General News Department

The Boston Elevated Railway has announced an increase in the pay of employees which is said to aggregate $2,000,000 a year.

In court at Jamaica, N. Y., July 11, Michael Halleran, 27 years old, a crossing flagman of the Long Island Road, was sentenced by Justices Edwards, McInerney and Salmon to six months imprisonment for being intoxicated on duty.

It is reported that negotiations are in progress between officers of the Southern Pacific and the authorities of the Mexican government to restore the line of the Southern Pacific of Mexico to the officers of the company for operation. For some time the line has been in the hands of Mexican military authorities.

On the Broadway Limited of the Pennsylvania, east-bound, on the night of July 13, near Bucyrus, Ohio, four passengers were slightly wounded by shot from a shotgun. The passengers were sitting on the observation platform at the rear of the train and the shooting is said to have been done by a boy at the roadside, presumably animated by mere mischief.

The Lehigh Valley has given an annual pass to each employee who has been in the service of the company over fifty years, good for himself and his wife over all of the company's lines. On the list of these men there are 16 names, including two machinists, two boiler-makers, two car repairers, three watchmen and three laborers.

In connection with the passage by Congress of appropriations for railroad construction in Alaska, Lieutenant Mears, of the Alaskan Commission, announces that there is still a surplus supply of labor in Alaska, both skilled and unskilled. The government has just made the final payment of $650,000 on the Alaska Northern Railway, which was bought to be made a part of the new government railroad.

The employees of the Buffalo, Rochester & Pittsburgh at the shops of the company at Du Bois, Pa., said to number 900, who went out on strike July 12, came to an agreement with the officers of the road on the 14th and returned to work. The settlement between the company and the employees provides for increases in pay varying from 10 to 15 per cent; and it is said that time and a half will be paid for overtime work.

The Northern Pacific, in an effort to reduce loss and damage claims, has issued a circular to agents, conductors and yard foremen, announcing the organization of a freight claim prevention department as a part of the bureau of efficiency. The department is tentatively operating east of the Missouri river. Its province is to determine the causes which originate claims and to endeavor to eradicate them. The circular states that each case will be carefully investigated and given attention along educational lines. Printed cards have been furnished to the employees on which they may send suggestions to their superintendents.

Resignation of Professor C. Frank Allen

C. Frank Allen, professor of railroad engineering and for the past 30 years a member of the faculty of Massachusetts Institute of Technology, resigned July 10. Professor Allen graduated from the Institute in the class of 1872. For six years after his graduation he was engaged in work connected with the water and sewerage systems of several cities, including Boston and Newton, Mass., and Providence, R. I. In 1878 he entered the service of the Atchison, Topeka & Santa Fe, and was assistant engineer for the Santa Fe until 1885. In the meantime he studied law, and was admitted to the bar in New Mexico. He was later, in 1901, admitted to the Massachusetts bar. Professor Allen was made assistant professor of railway engineering at Massachusetts Institute of Technology in 1887. He became associate professor two years later, and subsequently was also appointed professor of railroad engineering. Among his technical writings are included: "Railway Curves and Embankments," "Tables for Earth Computations" and "Field and Office Tables."

It Pays to be a Railroader

[Harrisburg (Pa.) Star-Independent]

A galaxy of automobiles—including Fords and Packards—parked together, which to the bystander brought to mind scenes identified with funerals, ball games, track meets, a $2 show or a duel along the countryside, attracted considerable attention today at the Pennsylvania Railroad siding opposite the Reading terminal.

"Who is coming or going?" asked the man in the ice cream suit.

"Nobody," replied a well-fed gentleman counting a wad of yellowbacks. "Today is pay day."

The man in white sighed and wished he were a conductor, brakeman or engineer—or in his own words, "anything but an official."—*Harrisburg (Pa.) Star-Independent.*

Regulation of Railway Purchases

Frank Trumbull, president of the Chesapeake & Ohio; Robert S. Lovett, chairman of the board of directors of the Union Pacific, and Alfred P. Thom, general counsel of the Southern Railway, acting for the Railway Executives' Advisory Committee, and representing 84 per cent of the railroads of the country, on Wednesday of this week called on President Wilson to recommend the suspension of that section of the Clayton act, Section 10, which requires competitive bidding for railroad supplies. They ask to have the subject investigated by a joint committee of Congress, or by the Interstate Commerce Commission. It is understood that the President gave them a favorable response. They also appeared before the House Judiciary Committee, and were informed that favorable reports in the pending resolution have been made by sub-committees in both houses of Congress.

As noted last week, page 73, this law, as it now stands, goes into effect October 15 next. A resolution has been introduced in Congress to suspend Section 10 for two years, and this the President was asked to endorse. It is believed that the section was adopted by Congress in the conference report of the Senate and the House, without careful consideration of its drastic effect. As is well known, most of the larger railroads are made up of several separate corporations, and dealings between parent and subsidiary companies consist largely of mere bookkeeping technicalities. The parent companies do purchasing for the entire system, obtaining, because of large orders, lower prices than could be secured by the subsidiary lines.

Arbitration of Telegraphers' Wages

The arbitration of the claims of the telegraphers of the New York Central for increased pay and easier conditions of work will probably be the subject of a report within the coming week. The arbitrators, Messrs. H. K. Daugherty, a lawyer, of Grove City, Pa.; W. J. Fripp, general manager of the Eastern lines of the New York Central, and E. J. Manion, vice-president of the operators' brotherhood, have been listening to testimony in New York City for the past 10 days, and are now discussing the evidence. The witnesses brought forward by the brotherhood told of the difficulties of their work; the burdensome character of their incidental duties such as handling baggage and freight, keeping stations clean, attending switch lamps and answering telephone calls; and the cost of living. Supporting the demand for a more liberal allowance for vacations, the brotherhood leaders told of other roads on which two weeks, with pay, is allowed each operator once a year. It appears that in Illinois the New York Central pays certain telegraphers on a basis higher than that which prevails in the eastern part of its territory, and the efforts of the spokesmen for the operators were directed to securing the higher rate throughout the Central lines. They declare that they do not want old-age pensions; they want to prepare for old age themselves.

Officers of the road told of the comparatively easy character of most of the work in a large majority of the telegraph offices,

denying some of the claims put up by the spokesmen for the employees. Attention was called to the fact that many telegraphers have an income from the express company; and one telegrapher said that from that source he received $30 a month. As showing the possibilities of running a double track railroad without telegraphers, one witness for the company said that on the occasion of the Dayton (Ohio) flood in 1913, the Lake Shore & Michigan Southern ran trains between Cleveland and Toledo, 106 miles, without the aid of the telegraph, for a period of 11 days; and many extra passenger trains were run, because of washouts on other roads. The interference of the seniority rule, demanded by the brotherhood, with the best arrangement for making promotions, was set forth in some detail.

The rates of pay of telegraphers on the New York Central, according to the principal witness for the brotherhood, average $66 or $68 a month; whereas, according to his claim, the Pittsburgh & Lake Erie pays an average of $81.53 a month; the Boston & Albany, $78.86; the New Haven, $77.28, and the Boston & Maine, $75.37.

The chairman of the telegraphers' brotherhood on the New York, Chicago & St. Louis, subsidiary of the New York Central, made a statement in which he declared that telegraphers received smaller pay than teachers, bank clerks and clerks in factories and other industrial establishments in various towns in Ohio, Indiana and Pennsylvania.

Transportation of the National Guard

In answer to criticisms concerning the transportation, etc., of the national guard, Secretary Baker and the war department has made public some of the reports from the army officers who have been investigating the matter. In giving out the reports Secretary Baker himself said that "the war department regards the handling of the details of the movement of the troops to the border as excellent in every respect."

Major General Leonard Wood, commanding the eastern department, in his report said that "All troops leaving mobilization camps in the eastern department were furnished with ten days' travel rations. Trains were provided with either a cook car or baggage car with a range set up in it, and this has been done in all cases wherever possible. Where there was no opportunity to furnish coffee to troops they were provided with money. It is not possible that troops which have been reported short of rations at Kansas City and Cincinnati could have been short unless rations had been thrown away, as every precaution had been taken to see that they started with an ample supply.

"Sleeping space furnished national guard troops mustered into service of the United States en route to the Mexican border was that prescribed by the war department. When available, tourist sleepers have been provided, and when not available, day coaches provided by war department regulation of three men to each two double seats. When day coach equipment was available, the railroads provided one double seat to each man without extra charge. Troops have been transferred from day coaches to tourist sleepers when en route whenever possible to do so. Cars without lights were not used to transport troops. Troop trains were not sidetracked or delayed to accommodate private business, but troop trains have been held on request of commanding officers to exercise men and animals and for bathing the men . . . ."

Major General Thomas H. Barry, commanding the central department, said: "Under instructions from the war department sleeping cars were furnished only by the quartermaster general's office, and orders directed that coaches must be used on the basis of three men to each two double seats, and that troops must not be held at mobilization camps awaiting tourist sleepers, explaining that where forwarded from point of origin in day coaches every effort was made to meet trains en route with tourist sleepers. In some cases troops started in day coaches.

"All troop trains from the central department left with proper lighting facilities. No information that any cars were sidetracked or delayed to accommodate private business. All troops leaving mobilization camps in the central department after July 1 carried ten days' rations. The comparatively few organizations leaving prior to July 1 carried sufficient rations to allow for delays en route, and all troops had sufficient to carry them to the border. . . . All troop trains were provided with either baggage or open-end box cars with cooking arrangements. Water was provided for all troop trains before detparture, in accordance with the regulations, and in many cases extra water cans and ice were carried.

"All troop trains were inspected by camp quartermasters, and in many cases by senior mustering officers, surgeon, organization commander and railroad officials."

Major General J. Franklin Bell, commanding the western department, made a similar report and concluded:

"I personally inspected and supervised administration of mobilization camps. Everything which could be controlled by subordinates of the regular army and those at headquarters was done as promptly and thoroughly as possible under the circumstances. Consider mobilization and forwarding of troops to border relatively most creditable to all concerned.

"Not a single complaint received at department headquarters from any source."

The Wage Controversy

Members of the organizations of train and engine employees, now taking a strike vote to enforce their demands for an increase in wages, are holding public meetings in railroad centers throughout the country at which addresses are made on the subject of the wage controversy. At such a meeting held at Spokane, Wash., recently, resolutions were adopted which included the following:

"Regardless of any controversies which may be pending as between the railroads and our brotherhoods, we stand ready to perform any and all duties which will make for the prompt movement of such trains as may be necessary for the transportation of troops and supplies to the border, and at all times to do our full duty toward upholding the dignity of our country and the honor of our flag."

The Transportation Brotherhoods' Publicity Bureau has issued a statement regarding the proposal of the railways that the wage controversy be settled either by arbitration or by reference to the Interstate Commerce Commission. The statement is in part as follows:

"The Interstate Commerce Commission has no authority under the law to regulate wages of employees any more than it has to regulate the price of steel rails and other supplies purchased by the railroad companies. Therefore, any investigation made by the Interstate Commerce Commission into the subject of wages would come to naught for the reason that the commission has no power to settle the matter.

"Under the Newlands arbitration law, it is distinctly provided that arbitration can be set in operation when a strike is threatened. No man has a right to say that a strike is threatened until the result of the strike vote, now being taken, is ascertained. The will of the employees must be known before a strike can be threatened.

"If the Interstate Commerce Commission would assume the responsibility of agreeing that the demands of the men should be met, it would clearly be up to the commission to provide the means for meeting any increased cost of operation. The railways, of course, would like to put the Interstate Commerce Commission under this obligation to grant increased freight rates.

"If it is right and proper for the freight train employees to go into an arbitration as to whether they shall be worked excessive hours and as to what they shall sell their labor for, then it would only be consistent for the railway car and engine builders and railway supply dealers to agree to arbitrate with the railroads as to the price the railroads should pay for these things.

"The principle objection, however, of the employees to arbitration would be on the ground of the inability to secure impartial arbitrators who were sufficiently acquainted with the technicalities of a problem of this kind."

The National Conference Committee of the Railways, Elisha Lee, assistant general manager of the Pennsylvania Railroad, chairman, has published advertisements in many of the weekly papers, giving figures showing the wages of train employees in eastern, western and southern territory. The advertisements are signed by the members of the National Conference Committee, and read as follows:

To the American Public:

Do you believe in arbitration or industrial warfare?

The train employees on all the railroads are voting whether

they will give their leaders authority to tie up the commerce of the country to enforce their demands for a 100 million dollar wage increase.

The railroads are in the public service—your service. This army of employees is in the public service—your service.

You pay for rail transportation 3 billion dollars a year, and 44 cents out of every dollar from you goes to the employees.

On all the eastern railroads in 1915, 75 per cent of the train employees earned these wages (lowest, highest and average of all) as shown by the payrolls:

	Passenger		Freight		Yard	
	Range	Av'ge	Range	Av'ge	Range	Av'ge
Engineers	$1,641 } 3,224	$1,931	$1,585 } 2,992	$1,783	$1,303 } 2,178	$1,543
Conductors	1,553 } 3,004	1,831	1,552 } 2,901	1,642	1,145 } 1,991	1,315
Firemen	951 } 1,704	1,128	933 } 1,762	1,109	752 } 1,633	935
Brakemen	957 } 1,707	1,141	862 } 1,521	973	834 } 1,635	1,085

The average yearly wage payments to *all* eastern train employees (including those who worked only part of the year), as shown by the 1915 payrolls, were:

	Passenger	Freight	Yard
Engineers	$1,796	$1,546	$1,384
Conductors	1,724	1,404	1,238
Firemen	1,033	903	844
Brakemen	1,018	858	990

A 100 million dollar wage increase for men in freight and yard service (less than one-fifth of all employees) is equal to a 5 per cent advance in all freight rates.

The managers of the railroads, as trustees for the public, have no right to place this burden on the cost of transportation to you without a clear mandate from a public tribunal speaking for you.

The railroads have proposed the settlement of this controversy either under the existing national arbitration law, or by reference to the Interstate Commerce Commission. This offer has been refused by the employees' representatives.

Shall a nation-wide strike or an investigation under the government determine this issue?

The figures given for the western and southern roads are as follows:

On all the southern railroads in 1915, 75 per cent of the train employees earned these wages (lowest, highest and average of all), as shown by the payrolls:

	Passenger		Freight		Yard	
	Range	Av'ge	Range	Av'ge	Range	Av'ge
Engineers	$1,972 } 3,983	$2,306	$1,455 } 3,505	$1,916	$1,156 } 2,424	$1,566
Conductors	1,552 } 2,696	1,847	1,353 } 2,358	1,580	1,055 } 1,749	1,245
Firemen	943 } 1,652	1,209	649 } 1,638	979	406 } 1,302	777
Brakemen	957 } 1,736	1,109	755 } 1,854	958	754 } 1,405	990

The average yearly wage payments to *all* southern train employees (including those who worked only part of the year), as shown by the 1915 payrolls, were:

	Passenger	Freight	Yard
Engineers	$2,144	$1,712	$1,313
Conductors	1,723	1,488	1,157
Firemen	1,096	865	688
Brakemen	1,013	845	868

On all the western railroads in 1915, 75 per cent of the train employees earned these wages (lowest, highest and average of all) as shown by the payrolls:

	Passenger		Freight		Yard	
	Range	Av'ge	Range	Av'ge	Range	Av'ge
Engineers	$1,747 } 3,094	$2,195	$1,537 } 3,076	$2,071	$1,056 } 2,445	$1,378
Conductors	1,543 } 2,789	1,878	1,454 } 2,933	1,935	1,151 } 2,045	1,355
Firemen	1,053 } 2,078	1,317	751 } 2,059	1,181	418 } 1,552	973
Brakemen	854 } 1,719	967	874 } 1,961	1,135	862 } 1,821	1,107

The average yearly wage payments to *all* western train employees (including those who worked only part of the year), as shown by the 1915 payrolls, were:

	Passenger	Freight	Yard
Engineers	$2,038	$1,737	$1,218
Conductors	1,772	1,624	1,292
Firemen	1,218	973	832
Brakemen	921	1,000	1,026

Canadian Board of Inquiry

A. H. Smith, president of the New York Central, is chairman of a board of three members, which is to inquire into the railway situation in Canada, a temporary commission just appointed by the Canadian government, and announced at Ottawa, July 14. The other members are Sir Henry L. Drayton, K. C., chairman of the Canadian Railway Commission, and Sir George Paish. The Railway Board of Inquiry, as it will be called, will be constituted under the Inquiries Act, and provincial governments have been requested to co-operate with it. The board is required to report without delay. Sir Henry Drayton has had long experience as chairman of the Board of Railway Commissioners, and has a record for ability, firmness and impartiality.

Sir George Paish, the eminent financial authority in Great Britain has always taken a lively interest in Canadian affairs.

The scope of the proposed inquiry is outlined as follows:

1. The general problem of transportation in Canada.

2. The status of each of the three transcontinental railways, the Canadian Pacific, the Grand Trunk and the Canadian Northern, having special reference to the following considerations:

(a) The territories served by each, and the service which it is capable of performing.

(b) Physical conditions, equipment and capacity.

(c) Methods of operation.

(d) Branch lines, feeders and connections in Canada.

(e) Connections in the United States.

(f) Steamship connections.

(g) Capitalization, fixed charges and net earnings, having regard to present conditions and probable future development.

3. The re-organization of any of the systems, or the acquisition thereof by the state, and in the latter case the most effective system of operation, whether in connection with the Intercolonial Railway or otherwise.

4. All matters which the members of the board may consider relevant.

Disastrous Floods in North Carolina and Tennessee

Floods in the Catawba and French Broad rivers, July 16, submerged scores of buildings in Asheville and Biltmore, N. C., and in numerous smaller places; and did damage amounting to millions of dollars; and five or more persons were drowned. The station of the Southern Railway at Asheville together with many cars and locomotives were submerged. In Charlotte, N. C., a bridge of the Southern Railway was carried away, together with ten or more men, including workmen of the railroad company and linemen of the Western Union Telegraph Company. The men were reported lost, but the report is not confirmed. The Seaboard Air Line bridge at Mount Holly, N. C., was destroyed, and traffic on that company's lines was interrupted at a number of places by washouts. Much damage was done in East Tennessee, a number of bridges being destroyed on the Virginia & Southwestern. The Carolina, Clinchfield & Ohio, and other roads suffered in many places, rivers rising from 15 feet to 30 feet above normal level. The Norfolk & Western was flooded west of Radford, Va. Press despatches from Wilmington, N. C., and Charleston, S. C., reported floods at many places and traffic generally interrupted.

An officer of the Southern Railway summarized the situation on that company's lines on July 19 as follows:

"The most serious flood damages to the Southern Railway are in North Carolina on Catawba river draining east through the Piedmont region, and French Broad river draining west through Asheville, caused apparently in both cases by failure of dams, as our main line bridges on the several other rivers in the coastal plain all withstood ordinary flood waters. Catawba river has taken out bridges of all railroads west of Camden and Wateree, S. C., including four Southern Railway bridges on radiating lines, Salisbury-Asheville, Charlotte-Atlanta, Charlotte-Columbia and Rockhill-Camden. Through passenger service from the east to Atlanta, Birmingham, Memphis and beyond was maintained via Lynchburg, Bristol and Knoxville. The roadbed on our mountain lines in western North Carolina was badly scoured. Work of reconstruction at all breaks is now progressing satisfactorily."

The Norfolk & Western, on the 18th, reported its main line repaired, so that normal train movement was restored.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY, 1916

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses							Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.				
Ann Arbor	294	$181,614	$40,649	$236,076	$27,396	$34,716	$5,510	$81,457	$549	$13,949	$163,577	$72,499	$15,900	$54,652	$4,595
Arizona Eastern	378	302,496	44,160	364,394	64,585	35,881	2,369	62,515	1,602	11,000	177,659	186,736	16,200	170,445	75,956
Atlantic & St. Lawrence	167	130,642	19,461	160,669	20,652	26,309	4,636	94,988	.....	4,895	151,480	9,189	11,505	—2,316	55,047
Atlantic City	170	72,741	130,904	214,312	35,977	21,013	1,069	99,266	56	1,080	158,462	55,850	10,000	45,819	28,296
Atlantic Coast Line	4,705	2,124,511	606,383	2,990,987	368,323	525,557	61,605	962,680	9,308	81,176	2,006,229	984,757	137,000	847,258	282,087
Baltimore & Ohio	4,535	8,139,116	1,293,868	10,201,713	1,483,451	2,065,305	158,074	3,320,488	62,871	256,260	7,346,302	2,855,411	316,887	2,534,679	—299,477
Baltimore & Ohio Chicago Terminal	79	.....	653	165,770	20,409	26,552	1,554	70,050	1,385	10,132	126,907	38,863	22,689	16,174	—7,811
Baltimore, Chesapeake & Atlantic	88	57,837	24,822	88,511	11,791	14,571	1,302	45,537	.....	2,705	75,906	12,605	2,243	10,362	—2,370
Bangor & Aroostook	632	276,291	50,778	344,284	44,310	44,261	4,701	76,343	2,331	12,822	184,767	159,517	14,150	145,367	54,474
Belt Ry. Co. of Chicago	31	.....	.....	262,089	17,072	33,183	1,573	108,895	.....	6,075	166,798	95,292	15,199	80,093	—15,908
Buffalo & Susquehanna R. R. Corporation	253	108,244	6,762	118,570	21,176	36,970	1,241	33,175	.....	4,952	97,514	21,055	2,600	18,455	8,124
Canadian Pacific Lines in Maine	233	103,811	15,295	129,669	7,187	14,706	5,413	59,982	.....	4,171	91,458	38,211	.....	38,211	45,492
Carolina, Clinchfield & Ohio	283	256,084	20,795	283,555	26,434	37,517	16,818	51,914	.....	14,829	146,552	137,003	9,500	127,503	56,503
Carolina, Clinchfield & Ohio of S. C.	18	15,997	1,117	17,555	811	108	2,360	2,595	.....	798	6,623	10,932	500	10,371	7,572
Central of Georgia	1,924	637,194	234,832	978,565	162,038	181,245	41,292	307,153	1,961	44,295	736,197	242,367	54,548	183,379	46,046
Central of New Jersey	681	2,101,703	533,006	2,850,499	223,302	396,066	26,888	980,363	14,652	61,235	1,701,904	1,148,595	139,594	1,009,001	275,893
Central New England	304	403,563	26,910	451,827	42,947	35,799	1,530	144,008	.....	4,256	228,534	223,293	17,800	205,493	51,373
Central Vermont	411	272,830	64,719	371,864	42,312	45,322	8,153	162,153	150	8,485	266,575	105,289	15,640	89,652	19,029
Charleston & Western Carolina	342	108,385	24,994	141,087	28,051	21,307	3,581	51,406	.....	4,300	108,644	32,443	5,000	27,414	410
Chesapeake & Ohio Lines	2,374	3,416,560	509,952	4,243,767	553,190	841,161	60,426	1,196,806	29,802	86,157	2,763,347	1,480,421	162,272	1,317,601	346,957
Chicago & Alton	1,052	949,755	307,044	1,369,246	165,196	299,451	39,674	449,438	10,445	32,802	996,518	372,728	51,877	316,374	69,386
Chicago & Eastern Illinois	1,136	969,314	225,907	1,299,148	228,198	282,550	25,540	439,969	8,175	38,558	1,021,860	277,288	62,500	214,556	336,629
Chicago & Erie	270	635,265	44,382	739,819	73,900	77,527	20,342	261,064	2,504	15,173	449,590	290,229	22,230	267,999	177,920
Chicago & North Western	8,108	5,354,441	1,689,758	7,914,805	1,465,335	1,197,021	100,519	2,794,794	60,481	164,435	5,769,823	2,144,983	405,000	1,739,797	280,076
Chicago, Indianapolis & Louisville	622	488,349	163,079	704,030	88,536	114,217	20,371	217,976	476	17,342	458,687	245,342	36,505	208,778	67,360
Chicago, Peoria & St. Louis	255	122,151	22,540	152,994	15,035	39,845	6,088	61,239	.....	5,590	127,797	25,196	6,000	19,196	25,743
Chicago, Rock Island & Gulf	477	198,624	44,767	262,962	41,764	47,246	9,381	85,608	1,118	8,008	193,122	69,840	10,000	59,728	52,625
Chicago, Terre Haute & Southeastern	373	160,736	15,498	181,469	53,461	69,391	4,361	53,972	963	8,765	190,813	—9,344	13,383	—22,978	—41,334
Cincinnati, Hamilton & Dayton	622	724,794	94,396	923,321	218,376	154,944	14,339	310,363	3,404	16,996	717,506	205,815	29,796	175,881	110,330
Cincinnati, Indianapolis & Western	322	123,265	44,405	186,232	39,027	19,544	6,179	78,361	463	6,819	149,773	36,459	8,665	27,793	.....
Cincinnati Northern	246	136,086	14,228	155,954	27,503	27,976	3,852	52,284	.....	3,122	114,738	41,216	6,000	35,216	22,701
Colorado Midland	338	89,806	11,993	110,994	23,781	28,668	8,631	51,544	1,049	5,286	118,959	—7,965	6,800	—14,765	4,521
Colorado & Southern	1,102	560,464	108,676	721,134	102,312	137,271	11,750	199,830	3,374	20,371	470,908	250,226	35,000	215,212	142,874
Denver & Salt Lake	255	107,446	28,389	140,319	17,640	32,919	3,075	47,148	.....	2,424	103,206	37,113	7,008	30,104	—5,682
Detroit & Mackinac	393	80,494	25,412	111,725	15,346	20,622	1,754	33,067	.....	3,015	73,804	37,921	8,029	29,892	22,232
Detroit & Toledo Shore Line	81	144,641	.....	144,986	11,655	9,019	1,799	35,068	.....	3,052	60,593	84,392	6,925	77,467	23,630
Detroit, Grand Haven & Milwaukee	191	227,000	44,000	307,393	53,905	33,184	5,216	129,385	663	4,290	226,644	80,749	3,770	76,764	76,444
Detroit, Toledo & Ironton	441	178,510	11,819	205,242	21,852	25,300	4,704	86,229	.....	6,467	144,552	60,690	6,000	54,690	34,253
Duluth & Iron Range	288	889,192	18,966	922,228	93,230	75,910	1,402	181,425	2,042	10,085	362,384	599,844	45,932	513,910	69,768
Duluth, Missabe & Northern	399	1,644,781	29,790	1,741,039	139,713	157,017	2,583	263,350	1,175	12,578	576,416	1,164,622	86,687	1,077,936	249,802
Duluth, South Shore & Atlantic	628	206,382	76,587	311,956	64,721	40,094	8,851	106,679	3,938	9,602	233,884	78,072	19,000	59,063	46,055
Duluth, Winnipeg & Pacific	187	115,579	16,124	137,053	19,242	13,961	1,872	42,033	551	6,420	84,079	52,973	6,853	46,121	26,610
Erie	1,988	4,396,952	761,932	5,710,310	484,465	1,190,451	96,300	2,003,986	34,320	114,907	3,921,265	1,789,045	194,147	1,593,377	583,222
Fort Worth & Denver City	454	322,557	108,003	453,661	63,855	77,579	6,754	121,606	2,431	15,952	288,178	165,483	15,217	150,267	73,616
Galveston, Harrisburg & San Antonio	1,351	707,129	240,313	1,038,077	151,860	154,455	32,611	410,380	9,735	31,230	801,093	236,984	48,502	188,148	152,139
Galveston Wharf	12	.....	.....	112,608	478	2,871	333	32,224	16,194	370	52,469	60,138	12,000	48,138	7,847
Georgia	307	168,968	59,075	247,343	29,036	43,173	12,805	104,316	74	8,893	198,279	49,064	4,873	44,065	26,459
Georgia, Southern & Florida	395	117,793	48,819	193,440	25,496	43,103	8,810	65,391	927	8,463	152,177	41,263	12,594	28,391	10,754
Grand Rapids & Indiana	575	335,212	107,697	481,471	65,823	90,265	12,301	181,011	203	15,157	364,764	116,707	24,081	92,622	42,314
Grand Trunk Western	347	680,000	102,000	822,113	82,179	119,819	15,965	262,468	6,276	13,717	500,424	321,689	32,970	288,409	245,458
Great Northern	8,102	5,288,003	1,013,860	6,917,872	1,382,550	850,186	108,549	1,920,225	72,061	114,153	4,412,146	2,505,726	438,431	2,066,834	1,016,452
Gulf, Colorado & Santa Fe	1,938	906,352	224,363	1,217,487	260,666	196,238	28,884	454,611	.....	44,331	978,740	238,747	54,687	183,713	59,281
Houston & Texas Central	895	322,778	116,261	481,966	81,827	72,753	16,838	174,256	4,666	18,344	368,329	113,637	30,517	83,045	28,686
Indiana Harbor Belt	110	.....	.....	377,001	61,019	51,966	2,824	139,203	.....	8,791	263,804	113,197	7,845	105,322	23,622
Kanawha & Michigan	177	287,149	32,572	327,941	37,374	70,980	2,852	73,870	50	7,137	192,263	135,678	14,150	121,503	42,698
Kansas City, Mexico & Orient	738	167,750	77,099	207,072	46,157	48,228	8,805	87,395	.....	10,053	200,638	6,434	11,032	—4,600	23,168
Lehigh & Hudson River	97	155,326	3,552	189,334	18,342	22,372	1,341	60,908	.....	4,333	107,296	82,037	5,000	77,037	15,444
Lehigh Valley	1,442	3,649,790	358,568	4,318,612	316,344	880,028	84,341	1,459,841	14,438	103,008	2,856,275	1,462,338	145,000	1,311,573	91,827
Long Island	397	388,679	746,576	1,313,144	152,070	136,062	12,913	481,059	6,245	34,220	821,160	491,984	72,627	419,215	71,533
Louisiana Western	208	140,763	52,550	208,446	29,742	35,536	7,381	49,251	1,411	6,102	129,419	79,027	10,583	68,357	34,589
Louisville & Nashville	5,038	4,012,972	978,702	5,358,819	683,278	1,008,832	123,586	1,529,030	20,582	108,775	3,465,493	1,893,326	195,710	1,697,137	846,939
Louisville, Henderson & St. Louis	200	100,301	33,142	142,418	33,886	9,111	4,983	40,970	.....	3,203	92,153	50,266	3,800	46,452	35,887
Minneapolis & St. Louis	1,646	662,880	144,191	855,850	120,774	134,993	18,537	308,100	90	23,088	605,581	250,269	41,158	208,810	—13,629
Minneapolis, St. Paul & S. S. Marie	4,229	2,244,378	444,637	2,888,212	311,290	393,363	50,895	837,396	13,570	58,185	1,659,617	1,228,594	119,281	1,109,314	711,762
Missouri, Kansas & Texas	3,865	1,848,540	671,125	2,731,345	535,581	570,637	57,976	902,629	17,558	98,799	2,183,128	548,217	129,958	416,826	—52,047
Missouri, Oklahoma & Gulf	334	94,631	22,608	125,009	22,783	21,845	4,949	57,312	110	7,659	114,659	10,350	8,272	2,054	47,503
Missouri, Oklahoma & Gulf of Texas	125	16,018	708	16,907	3,193	3,470	1,845	10,146	.....	1,522	20,176	—3,269	361	—3,629	8,925
Mobile & Ohio	1,122	924,871	101,209	1,084,534	106,912	228,661	35,641	361,090	2,245	30,967	765,516	319,018	36,460	281,959	24,521
New Orleans & Great Northern	285	130,186	26,699	171,975	19,394	17,914	2,846	42,467	186	6,640	89,447	82,527	3,886	78,613	34,619
New York, New Haven & Hartford	2,005	3,428,111	2,536,898	6,866,229	779,652	871,706	45,619	2,506,626	79,664	133,568	4,415,485	2,450,744	250,000	2,200,583	462,311
New York, Ontario & Western	568	487,352	111,619	722,212	92,873	98,139	8,063	282,144	.....	16,140	495,329	226,883	23,000	203,865	28,278
New York, Philadelphia & Norfolk	112	390,144	34,848	457,092	34,100	97,602	4,741	147,703	4,182	11,577	299,385	157,707	8,500	149,153	69,039

Roadmasters' and Maintenance of Way Association

The annual meeting of the Roadmasters' and Maintenance of Way Association will be held at the Hotel McAlpin, New York, September 19 to 22. A special train will be provided over the New York Central for members from Chicago and the West.

The Track Supply Association, which meets with the Roadmasters' and Maintenance of Way Association, is now completing arrangements for its exhibit. Practically all the space has now been assigned, and indications are that the exhibit will be one of the largest in the history of this association. The following firms have signified their intention of exhibiting:

Ajax Forge Company, Chicago.
Ajax Rail Anchor Company, Chicago.
American Hoist & Derrick Company, St. Paul, Minn.
American Steel & Wire Company, Chicago.
American Valve & Meter Company, Cincinnati, Ohio.
Bowman, T. B., Chicago.
Carborundum Company, Niagara Falls, N. Y.
Carnegie Steel Company, Pittsburgh, Pa.
Chicago Malleable Castings Company, West Pullman, Ill.
Cleveland Frog & Crossing Company, Cleveland, Ohio.
Creepcheck Company, New York.
Crerar-Adams Company, Chicago.
Dressel Railway Lamp Works, New York.
Duff Mfg. Company, The, Pittstburgh, Pa.
Elliot Frog & Switch Company, East St. Louis, Ill.
Empire Railway Appliance Corp., New York.
Eymon Continuous Crossing Company, Marion, Ohio.
Fairbanks, Morse & Company, Chicago.
Fairmont Gas Eng. & Ry. Motor Car Company, Fairmont, Minn.
Frictionless Rail Company, Boston, Mass.
Hatfield Rail Joint Mfg. Company, Macon, Ga.
Hauck Mfg. Company, Brooklyn, N. Y.
Hayes Track Appliance Company, Richmond, Ind.
Hussey-Binns Shovel Company, Pittsburgh, Pa.
Indianapolis Switch & Frog Company, Springfield, Ohio.
Ingersoll-Rand Company, 11 Broadway, New York.
Jordan, O. F., Company, Chicago, Ill.
Keystone Grinder & Mfg. Company, Pittsburgh, Pa.
Lackawanna Steel Company, Buffalo, N. Y.
Lundie, John, New York.
Madden Company, The, Chicago.
Mitchell Rail Anchor Company, W. M., Louisville, Ky.
Mudge & Company, Chicago.
Morden Frog & Crossing Works, Chicago.
National Malleable Castings Company, The, Cleveland, Ohio.
P. & M. Company, The, Chicago.
Pocket List of Railroad Officials, New York.
Positive Rail Anchor Company, Louisville, Ky.
Q. & C. Company, The, New York.
Rail Joint Company, The, New York.
Railroad Supply Company, The, Chicago.
Railway Review, Chicago.
Ramapo Iron Works, Hillburn, N. Y.
Reading Specialties Company, Reading, Pa.
Sellers Mfg. Company, Chicago.
Seltite Company, Inc., Westchester, N. Y.
Simmons-Boardman Publishing Company, New York.
Southern Railway Supply Company, St. Louis, Mo.
Templeton, Kenly & Company, Chicago.
Track Specialties Company, New York.
Union Switch & Signal Company, The, Swissvale, Pa.
Verona Tool Works, Pittsburgh, Pa.
Wharton, Wm., Jr., & Company, Inc., Philadelphia, Pa.
Wyoming Shovel Works, The, Wyoming, Pa.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, date of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—H. C. Boardman, D. L. & W., Hoboken, N. J. Annual convention, October 19-21, New Orleans, La.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Annual meeting, October 17, 18, Washington, D. C.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, Room 101, Union Station, St. Louis, Mo. Annual meeting, August 16-18, 1916, Memphis, Tenn.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th street, New York. Annual convention, October 9-13, Atlantic City, N. J.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—H. G. McConnaughy, 165 Broadway, New York. Annual convention, October 9-13, Atlantic City, N. J.

AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, general secretary, 75 Church St., New York.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 17-19, New Orleans, La.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—Owen D. Kinsey, Illinois Central, Chicago. Annual meeting, August 24-26, 1916, Hotel Sherman, Chicago.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.—George W. Lyndon, 1214 McCormick Bldg., Chicago. Annual convention, October 10, 1916, Waldorf-Astoria, New York.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—P. C. Jacobs, H. W. Johns-Manville Co., Chicago. Meetings with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cin'ti Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month. Room 1856, Transportation Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, C. H. & D., Lima, Ohio. Next meeting, August 15-17, 1916, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1126 W. Broadway, Winona, Minn. Annual meeting, August 29 to September 1, Hotel Sherman, Chicago.

MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—F. W. Hager, Fort Worth & Denver City, Fort Worth, Tex. Next convention, October 17-19, Philadelphia, Pa.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next annual meeting, September 12-14, 1916, "The Breakers," Atlantic City, N. J.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. N. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.

RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Fire Ins. Agt., Mobile & Ohio, Mobile, Ala. Annual meeting, October 3-5, 1916, New York.

RAILWAY REAL ESTATE ASSOCIATION.—Frank C. Irvine, 1125 Pennsylvania Station, Pittsburgh, Pa. Annual meeting, October 10, 1916, Chicago.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Myers Bldg., Bethlehem, Pa. Next annual convention, September 12-14, 1916, Grand Hotel, Mackinac Island, Mich.

RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—F. J. McAndrews, C. & N. W., Sterling, Ill. Next annual convention, September 19-22, 1916, New York.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.

SALT LAKE TRANSPORTATION CLUB.—R. E. Rowland, David Keith Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa. Annual meeting, October 18-20, Washington, D. C.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grand Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.

TOLEDO TRANSPORTATION CLUB.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meetings with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEWARK.—Roy S. Bushy, Firemen's Bldg., Newark, N. J. Regular meetings, 1st Monday, in month, except July and August, The Washington, 559 Broad St., Newark.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August. Waldorf-Astoria Hotel, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Gen'l Agent, Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings, bi-monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—W. S. Crilly, 620 South 7th St., St. Louis, Mo. Annual meeting, December 5, 1916. Noonday meetings, October to May.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, Ohio. Next meeting, September 5-8, 1916, Hotel Sherman, Chicago.

UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.

WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Grand Pacific Hotel, Chicago.

WESTERN SOCIETY OF ENGINEERS.—E. N. Layfield, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

Traffic News

The Pacific Mail Steamship Company, now said to be controlled by W. R. Grace & Co., announces that on August 19 it will resume sending ships across the Pacific. Three vessels have been engaged for use on this route, as an experiment. Rates for transportation of freight are now so high that it is expected that the extra expense due to the present navigation law of the United States will be partly or fully offset.

The Chicago, Burlington & Quincy last week ran a special train from St. Paul to Chicago, carrying a party of Shriners to a convention at Buffalo, which was completely equipped with telephones in every car and every berth. The train was composed of 12 cars, including a diner and a car equipped for band concerts. The telephones were installed by the Tri-state Telephone Company of St. Paul and Minneapolis, and the exchange was of the automatic type.

The Pennsylvania Railroad announces that beginning today, July 21, the Federal Express, between Washington and Boston, discontinued last January, will again be put in service; but it will be run only once a week each way, northbound on Friday, and southbound on Sunday evening. The train runs by way of the Lehigh & Hudson river and the Poughkeepsie bridge, as before; and one of the reasons given for putting it on at this time is that passengers desire to travel to and from the New England summer resorts without passing through New York City during the prevalence there of infantile paralysis.

The executive traffic officers of the western transcontinental lines were in conference for several days in Chicago last week for the purpose of considering the Interstate Commerce Commission's recent order rescinding the relief granted under the fourth section, on "Schedule C" commodities westbound, and certain Pacific coast products eastbound, on account of the absence of competition through the Panama canal. It is understood that no final conclusions were reached by the railroads as to just how they will proceed in complying with the order, which gives them the alternative of advancing the rates to the Pacific coast or reducing certain rates to intermediate points; and the details are still being considered.

Car Surpluses and Shortages

The American Railway Association Committee on Relations Between Railroads has issued Statistical Statement No. 18, giving a summary of freight car surpluses and shortages for July 1, 1916, with comparisons.

TOTAL SURPLUS

July 1, 1916	67,014
June 1, 1916	70,310
July 1, 1915	276,421

The surplus for June 1, 1916, includes figures reported since the issue of Statistical Statement No. 17.

There has been little change in the total car surplus situation since the report for June 1. There is a considerable box car surplus west and northwest of Chicago and on the Pacific Coast, but little in any other section. The coal car surplus shows a slight decrease, the greater part of the surplus being west and northwest of Chicago and in the East. The miscellaneous car surplus is mostly on the Pacific Coast and in the Middle West.

TOTAL SHORTAGE

July 1, 1916	14,898
June 1, 1916	12,617
July 1, 1915	785

The shortage for June 1, 1916, includes figures reported since the issue of Statistical Statement No. 17.

There is a very small increase in the box car shortage in practically all parts of the country, and a small increase in the coal car shortage in the East, but no large amount of shortage of any class of equipment in any one section.

The figures by classes of cars follow:

Classes	Surplus	Shortage
Box	26,455	8,465
Flat	3,189	902
Coal and gondola	14,097	5,003
Miscellaneous	23,273	528
Total	67,014	14,898

Commission and Court News

INTERSTATE COMMERCE COMMISSION

Minneapolis grain merchants have filed a complaint with the Interstate Commerce Commission against alleged discriminatory rates and transit privileges on carload shipments of grain and grain products from Washington, Oregon, Idaho, North and South Dakota and Montana to Chicago, Milwaukee, Minneapolis, Duluth and Superior, and through these cities to eastern destination.

The Interstate Commerce Commission began a hearing in Chicago on July 10 in its inquiry into the matter of rates on and classification of lumber and lumber products. The hearing, which lasted throughout last week and into this week, is being conducted by Chairman Meyer with the assistance of Examiner-Attorney Hines and Examiner Esch. In advance of the hearing the commission had gathered a mass of information on the subject by submitting interrogatories to lumbermen all over the country, and at the hearing both the shippers and the carriers were asked to answer other questions suggested by the commission. The hearing has been attended by approximately 200 persons, including lumber shippers, railroad traffic men and attorneys. The first week was devoted to the testimony of shippers, and the carriers followed. The testimony presented during the first week indicated a general satisfaction on the part of both shippers and railroads with the present situation as to lumber rates and classification, with minor exceptions, and with comparatively little disagreement between the position of the shippers and that of the railroads. A statement on behalf of the West Coast Lumbermen's Association, the Eastern Oregon Lumber Producers' Association, the Western Pine Manufacturers' Association, the California White and Sugar Pine Association and the California Red Wood Association was made by Joseph N. Teal, their attorney, and the representatives of the Western railroads announced that they would accept it as their own.

New York Storage

Opinion by Commissioner Harlan:

Prior to January 1, 1915, inbound domestic freight awaiting delivery in New York harbor or for transshipment coastwise could be held without storage charges for 10 days, either in cars or in railroad warehouses on the New Jersey shore, or at the Sixtieth street station of the New York Central. The charge for the following 10 days, or fraction thereof, was 1 cent per 100 lb., and for each succeeding 10 days one-half cent per 100 lb. By tariffs approved in *Lighterage and Storage Regulations at New York*, 35 I. C. C., 47, 54, the free storage period on domestic inbound freight was reduced from 10 days to 5 days, and the storage charge thereafter was made 1 cent per 100 lb. for each succeeding 10 days or fraction thereof. The respondents later filed tariffs in which storage charges in cents per 100 lb. were proposed, after the expiration of five days' free time, of one-half cent, respectively, for the first and second five-day periods, and 1 cent for each of the succeeding five-day periods. These tariffs having been suspended were finally canceled without becoming operative. Thereafter, by special permission of the commission, the tariffs at present in force were filed to become effective on January 16, 1916, on less than statutory notice. These latter tariffs provided, after five days' free time, a storage charge of one-half cent per 100 lb. for each succeeding five-day period or fraction thereof.

This adjustment apparently proving unsatisfactory, the respondents now propose a storage charge that increases with each successive period of 30 days. That is to say, after the expiration of five days' free time, the charge proposed of one-half cent for each of the successive five-day periods remains constant until six of such periods, or 30 days, have elapsed; for the next six five-day periods the charge proposed is 1 cent, and for the third period of the same duration, 2 cents per 100 lb. The following statement shows the variations in the charges in cents per 100

lb., after the expiration of free time, during the various periods hereinbefore mentioned:

Periods of storage	Prior to Jan. 15, 1916	Suspended I. and S. 780 subsequently canceled	Effective Jan. 16, 1916, and at present in effect	Proposed and here under suspension
5 days	1	½	½	½
10 days	1	1	1	1
15 days	2	2	1½	1½
20 days	2	3	2	2
25 days	3	4	2½	2½
30 days	3	5	3	3
35 days	4	6	3½	4
40 days	4	7	4	5
45 days	5	8	4½	6
50 days	5	9	5	7
55 days	6	10	5½	8
60 days	6	11	6	9
65 days	7	12	6½	11
70 days	7	13	7	13

Export traffic is affected by the proposed charges to the extent that the increased storage charges will apply if such traffic is placed in storage after the expiration of 15 days' free time. The chief complaint against the advanced rates was made by the dealers in flour. The commission finds that the new rates are justified and that the carriers are right in taking this measure to compel the removal of freight from their piers and warehouses within a reasonable period after it is tendered the consignee for delivery. (40 I. C. C., 265.)

Telephone Rates

Lott B. Malone v. New York Telephone Company et al. Opinion by Commissioner McCord:

The commission holds that a through "particular person" rate of $1.65 from Flushing, N. Y., to Canaan, N. H., composed of a rate of 15 cents for the first three minutes and 5 cents for each additional minute on calls from Flushing, N. Y., to New York City for beyond, and $1.50 for the first three minutes and 50 cents for each additional minute on calls from New York City to Canaan, N. H., is not proved unreasonable by a hypothetical through rate of $1.55 between Flushing and Canaan composed of a 5-cent "two-number" or local rate from Flushing to New York City and a $1.50 particular person rate from New York City to Canaan.

Telephone calls may be classified, and a through rate for one kind of service is not necessarily unreasonable merely because it exceeds an aggregate of intermediate rates for a different kind of service. Through calls at combination rates require fewer terminal services than separate calls under the rates combined, but combination through rates that include charges for terminal service not performed are unreasonable. The reasonableness of contract provision under which the service of complainant was discontinued is not decided, nor does the commission take up the question of the application of the fourth section to telephone charges. (40 I. C. C., 185.)

The Missouri River-Nebraska Cases

Opinion by Commissioner Clark.

This proceeding embraces five complaints brought by the commercial clubs of Sioux City and Council Bluffs, Iowa, St. Joseph and Kansas City, Mo., and Atchison, Kan., which are similar in character. The complainants attack as unreasonable, discriminatory, and prejudicial the class rates between the above-named cities and all points in Nebraska. Allegations of discrimination and prejudice are predicated upon comparisons of the rates in question with class rates which became effective for intrastate transportation between Omaha, Lincoln, and other Nebraska cities and points in that state on September 6, 1914, pursuant to an order of the Nebraska State Railway Commission, generally known as general order No. 19. This order prescribed new schedules of class rates applicable to the principal distributing centers on the Missouri River and in interior Nebraska which compete for the trade of Nebraska. Other allegations of unjust discrimination have reference to classification differences. Nebraska classification No. 1, effective December 15, 1911, names certain ratings applicable to intrastate shipments which are lower than those fixed by western classification No. 53 governing interstate traffic. The intrastate rates are also governed by certain exceptions to the Nebraska classification, which provide more liberal rules and lower ratings on intrastate traffic than are accorded to interstate shipments.

The defendants embrace all of the railroads having lines in Nebraska with the exception of the Santa Fe, the Great Western, the St. Paul and the Wabash, which reach only one city in that state.

The total reduction in revenues of all railroads serving Nebraska which would result from the application of the Nebraska rates to interstate as well as intrastate transportation was estimated to be from $1,200,000 to $1,400,000 annually.

The commission is convinced of the earnest endeavor of the Nebraska commission to deal with the complex problem of rate making with justice to all parties before it. It is its conclusion, however, that the intrastate rates prescribed in general order No. 19 are too low for application as reasonable maximum interstate rates between the Missouri river cities and points in Nebraska, and therefore too low to form the measure by which discrimination found to exist should be removed. This conclusion is sustained by the many rate comparisons and other related evidence, and by the material reductions in the defendants' revenues which would be consequent upon the application of the intrastate rates to interstate transportation.

The commission's conclusions are as follows: The defendants by charging higher class rates and by applying higher classification ratings and exceptions thereto, between Sioux City Council Bluffs, St. Joseph, Kansas City and Atchison, and points in Nebraska than between Omaha, Lincoln, Fremont, Beatrice, Fairbury, Plattsmouth, Hastings, St. Paul, Nebraska City, Grand Island, Columbus, Kearney, and Norfolk, and points in Nebraska for transportation under substantially similar circumstances and conditions, give an undue preference to the Nebraska points named.

It is also found that there is unreasonable preference in favor of the Nebraska cities in that the defendants publish class rates between the Nebraska cities named and other points in Nebraska which equalize in large measure charges between Omaha, Lincoln, Fremont, Beatrice, Fairbury, Plattsmouth, Nebraska City, Grand Island, Columbus, Kearney, and Norfolk, and said points in the state of Nebraska and do not publish between Sioux City, Council Bluffs, St. Joseph, Kansas City, and Atchison, and points in Nebraska, class rates which embody the same or similar equalizations.

The commission holds that the present class rates on interstate shipments between Sioux City and Council Bluffs, Iowa, St. Joseph and Kansas City, Mo., and Atchison, Kan., and points in Nebraska are unreasonable to the extent that they exceed a scale of reasonable maximum class rates prescribed. These rates are given for distances from 1 to 700 miles.

This scale is constructed, in substance, upon the first-class rates of the Iowa-Nebraska scale prescribed in Iowa State Board of R. R. Commissioners V. A. E. R. R. (28 I. C. C. 193,-563.) in connection with the percentage relation of classes which was adopted by the Nebraska commission. The first-class rates for distances 40 to 700 miles are the same as under the Iowa-Nebraska scale, while for distances less than 40 miles the first-class rates under that scale have been here readjusted by increasing the base rate and reducing the money rate of progression. The base rate of the Iowa-Nebraska scale is 13 cents, to which is added 3 cents per 5 miles from distances 6 to 20 miles and 2 cents per 5 miles for distances 21 to 40 miles, making a rate of 30 cents for 40 miles. The base rate of the scale found reasonable is 22 cents, to which is added 1 cent per 5 miles for all distances to 40 miles, making also a rate of 30 cents for 40 miles. While the result of this readjustment is to make some increase for the shorter distances over the rates of the Iowa-Nebraska scale, it is believed that the increased base rate more nearly reflects the actual terminal costs than does the base rate of that scale.

The money rate of progression is 1 cent per 5 miles for 100 miles, stated for 5-mile groups; 1 cent per 5 miles for distances 101-200 miles, stated for 10 mile groups; 0.75 of 1 cent per 5 miles for distances 201-700 miles, stated for 20-mile groups. This is substantially the same as the money rate of progression adopted by the Nebraska commission which, is 1 cent per 5 miles for distances 6 to 200 miles, stated for 5-mile groups; 1 cent per 5 miles for distances 201 to 400 miles, stated for 10-mile groups; 0.5 of 1 cent per 5 miles for distances 401-700 miles, stated for 10-mile groups.

The percentage relationship of classes adopted by the Nebraska commission, which meets with unqualified approval, is higher on certain classes than that prescribed in the Iowa-Nebraska scale. The principal change is in the fourth-class rate, which is increased from 50 per cent of first class to 60 per cent of first class, while fifth class is increased from 40 per cent of first class to 45 per cent of first class. The result is a spread of 15 per cent of first class between fourth class, under which the movement is largely less than carloads, and fifth class, under which the tonnage is in carloads. The corresponding spread of the Iowa-Nebraska scale is 10 per cent. Class A is increased from 45 per cent of first class to 50 per cent of first class, while Class E is reduced from 20 per cent of first class to 17 per cent of first class.

For transportation over two or more lines, not parts of the same system and not under a common ownership or control, the following arbitraries, in cents per 100 pounds, may be added:

Class	1	2	3	4	5	A	B	C	D	E
Cents	5	4	3½	3	2½	2½	2	1½	1½	1

(40 I. C. C. 201.)

STATE COMMISSIONS

Pennsylvania Full Crew Law

The public service commission of Pennsylvania, acting on complaints brought by the Brotherhood of Railroad Trainmen, has decided a number of questions concerning the interpretation of the law of that state, adopted June 19, 1911, prescribing the number of men that shall be employed on trains. The complaints were against the Pennsylvania, the New York, Chicago & St. Louis, the Pittsburgh & Lake Erie, the Baltimore & Ohio, the Central of New Jersey, and the Cumberland Valley.

The questions at issue were:

Is a combination passenger and baggage car to be considered one car or two under the law?

Is it complying with the law to permit an expressman to act as a baggageman, or vice versa?

Is it complying with the law to have a conductor of a cafe car serve as a brakeman?

Is a train traveling between a series of classification yards subject to the provisions of the full-crew law?

Is it sufficient defense for a railroad to show that its mail cars comply with the federal postal regulations in point of construction?

Should the railroad be required to carry a baggageman on a train, even though the baggage car is kept locked and there are no duties for a baggage man to perform?

The Pennsylvania runs a train, from Pittsburgh to New York, of nine cars, one of which, a combination car, contains baggage, but no train baggage man is employed, the baggage compartment being locked, and opened by the station baggage men; the commission rules that a train baggage man must be employed. The law requires the rear car, on a train made up only of mail cars, to have a rear platform and provision for easy access to it from the interior of the car. The railroad (the Pennsylvania) is required to provide a car with a suitable platform. On the Baltimore & Ohio one crew of six men includes the dining car conductor classed as a brakeman. The commission says that this is not a compliance with the law. The brakeman must be a brakeman all the time; one of his duties is constant watchfulness. This decision also applies to cases on the Central of New Jersey and the Philadelphia & Reading. One of the defendants claimed that parlor cars and sleeping cars are not to be classed as passenger coaches as specified in the statute; but the commission says that no such fine distinction in names of cars is allowable; sleeping cars are passenger coaches.

On the Cumberland Valley, the complainants alleged that a train consisting of a passenger coach and a combination baggage and smoking car should be called a train of three cars; but the commission rules that the correct number is two; and the train does not come within the requirement of the law.

A train of the Pennsylvania consisting of three passenger coaches and a fourth car used for both passengers and baggage is a train of four cars. On a certain train of the New York, Chicago & St. Louis the baggage man acts also as an express messenger; but the complaint of the Brotherhood that this man is wrongfully counted as a member of the crew, is dismissed.

The commission rules that the three yards of Pittsburgh & Lake Erie at McKee's Rocks, 23rd street, Pittsburgh, and 34th street, Pittsburgh, are virtually one yard, and that, therefore, the full-crew law does not apply to a movement within these limits.

COURT NEWS

Construction of Missouri Foreign Companies Law

The Missouri Supreme Court holds that the state statute of 1913, providing that no railroad corporation, except one incorporated under the laws of Missouri, shall be permitted to carry passengers or freight from one point in the state to another, is prospective, not retroactive; it should be construed as applying to railroads built after its enactment, and should not be so construed as to contravene existing rights.—State ex rel. Wabash v. Roach (Mo.) 184 S. W., 969.

Duty to Licensees

A derailed engine was being put back on the track when a person from curiosity took up a position just off the right of way, about 50 feet from the engine, knowing it was somewhat dangerous, and after he and others had been warned off. In placing a cable around the boiler it was placed back of some lugs, against which, on one of the pulls, the cable slipped. On making another pull, a lug snapped and was hurled against the bystander, inflicting injuries for which he sued, basing his right of action on the rule requiring those engaged in the use of machinery to use a proper degree of care to prevent injury to persons on adjoining property and those passing on adjacent streets. The Supreme Court of the State of Washington held that the plaintiff was a mere licensee who had exposed himself to the apparent danger of his own free will, and could not recover. The case was not analogous to those where persons on adjoining property are injured by articles thrown from trains.—Shafer v. Tacoma Eastern (Wash.) 137 Pac., 485.

Liability Under Separate Coach Laws

The state of Texas sued the Galveston, Harrisburg & San Antonio for penalties under the Texas statute of 1907, providing for separate accommodations for white and colored passengers. Colored passengers were carried in a Pullman sleeping car on a train running from Los Angeles to New Orleans. The Texas Court of Civil Appeals holds that the statute does not assess a pecuniary penalty against the railroad for failing to compel members of each race to ride in coaches or compartments provided for such race; the only penalty prescribed against the railroad is for a failure to furnish separate coaches and compartments. If it furnishes such accommodations, no penalty can be recovered from it, although a passenger may subject himself to a penalty by riding where he is not entitled to, and the conductor may also be subject to a penalty for permitting him to do so. The burden is on the state to show that the required accommodations were not provided. Evidence that white and negro passengers occupied together a particular Pullman coach is not sufficient to show that other coaches, properly marked and fitted, were not provided. Neither the railroad nor the conductor has, under such statutes, the right to compel an interstate negro passenger to leave the coach in which he was riding and go into another, though equal in point of comfort and convenience. Under such statutes, if it be conceded that they apply to Pullman sleepers (though the court thought they did not) the burden is on the state to show that no other Pullman coaches in the train were equipped as prescribed. If the train contained Pullman coaches, properly marked and fitted, the fact that a negro was permitted to ride in a Pullman not so marked or equipped, would not entitle the state to recover the penalty from the railroad. The court quoted with approval the Kentucky case of Commonwealth v. Illinois Central (1911), 141 Ky., 502, 133, S. W., 1158, decided under a similar statute. In that case it was held that the fact that a railroad hauls a sleeping car does not make it liable to indictment because of its hauling the sleeping car with its unseparated white and colored passengers within or through the state, as the railroad did not operate the sleeper within the meaning of the statute. The statute does not require railroads to have sleepers on their trains or own them; they are owned and furnished by the Pullman Company.—State v. G., H. & S. A. (Tex.), 184 S. W., 227.

Railway Officers

Executive, Financial, Legal and Accounting

P. L. Overman, freight auditor of the Western Maryland, at Baltimore, Md., has been appointed auditor of freight and passenger accounts.

Howard V. Platt, whose appointment as vice-president and general manager of the Oregon Short Line has been announced, was born at Lynn, Ind., on July 27, 1865. He entered railway service in 1885, in a clerical capacity on the Union Pacific. From 1886 to 1892 he was in train service on the same road. He was stationed at Pocatello, Idaho, as agent for the Oregon Short Line between February, 1892, and April, 1902, when he became agent at Salt Lake City. In March, 1903, he was appointed superintendent, and in May, 1905, left the Oregon Short Line to become superintendent of the Los Angeles division of the Southern Pacific. On October 31, 1908, he was appointed general superintendent of the southern district of the Southern Pacific, with headquarters at Los Angeles. In February, 1914, he was made assistant general manager at that city. His appointment as vice-president and general manager of the Oregon Short Line was effective on July 1. His headquarters are at Salt Lake City, Utah.

H. V. Platt

Louis A. Farquhar, whose appointment as assistant auditor of the Oregon-Washington Railroad & Navigation Company, has been announced, was born on July 17, 1880, near Hempstead, Tex. He graduated from Hempstead high school in 1896, and entered railway service with the Houston & Texas Central on August 1, 1900. He was consecutively clerk and cashier in the local freight office of that road at Hempstead until November 3, 1905, when he went to Austin, Tex., as depot freight agent of the Houston & Texas Central and the Missouri, Kansas & Texas. On August 24, 1906, he was made chief clerk to the superintendent of the Houston & Texas Central at Austin. From June 9, 1909, to August 15, 1909, he was chief clerk of general accounts of the Central Lines at Houston, Tex., and from the latter date until September 2, 1910, was traveling and office accountant of the same roads at Houston. He was then chief clerk to the auditor of the same lines at Houston, and on October 1, 1911, was made special accountant of the Sunset Central Lines, with headquarters at Houston. From November 19, 1911, to January 31, 1913, he was special accountant of the Union Pacific and Southern Pacific systems at Chicago and New York. From February 1, 1913, to September 30, 1914, he was special accountant for the Union Pacific system, with headquarters at New York. He was then auditor of the Norfolk Southern, with headquarters at Norfolk, Va., until April 10, 1915, when he again became special accountant for the Union Pacific system, with headquarters at New York. On June 1, 1916, he was appointed assistant auditor of the Oregon-Washington Railroad & Navigation Company, with headquarters at Portland, Ore.

L. A. Farquhar

The Western Pacific went out of the hands of the receivers on July 14, and the board of directors has announced that the following officers are reappointed: A. R. Baldwin, general attorney; J. F. Evans, general auditor, and Charles Elsey, treasurer, all with offices at San Francisco, Cal. Lyman Rhoades has been appointed assistant treasurer with headquarters at New York City.

C. C. Glessner, auditor of coal and coke receipts of the Baltimore & Ohio system at Baltimore, Md., has been promoted to auditor of freight claims, and the position of freight claim agent has been abolished. L. A. Lambert, auditor of miscellaneous receipts and accounts at Baltimore, has been appointed auditor of coal and coke receipts, succeeding Mr. Glessner, and the duties of the auditor of miscellaneous receipts and accounts will be assumed by J. M. Watkins, auditor of revenue at Baltimore.

O. P. Van Sweringen of Cleveland, Ohio, has been elected chairman of the board of the New York, Chicago & St. Louis. J. J. Bernet, vice-president of the New York Central and the Michigan Central at Chicago, has been elected president, and will also assume the duties of general manager of the New York, Chicago & St. Louis, with office at Cleveland, Ohio, succeeding W. H. Canniff, resigned, as commented on elsewhere in this issue. M. J. Van Sweringen, W. S. Hayden and J. R. Nutt have been elected vice-presidents, W. D. Turner has been elected secretary and Otto Miller, treasurer. The secretary and treasurer's offices will be moved from New York to Cleveland. The firm of M. B. & H. H. Johnson, Cleveland, have been appointed general counsel to succeed F. B. Carpenter, resigned. A. W. Johnston, general manager at Cleveland, has been appointed assistant to president.

Operating

C. E. Littlefield has been appointed assistant to manager of dining cars and hotels of the Union Pacific system, with office at Ogden, Utah.

George S. Everitt, trainmaster of the Kansas City, Mexico & Orient, has been appointed acting superintendent to succeed A. H. Dickinson, who resigned as superintendent at Wichita, Kan., to engage in other business.

H. B. Voorhees, general superintendent of the Cincinnati, Hamilton & Dayton at Cincinnati, Ohio, has also been appointed general superintendent of the northwest district of the Baltimore & Ohio Southwestern, with headquarters at the same city.

H. A. Hansen, assistant superintendent of dining cars and hotels of the Union Pacific at Omaha, Neb., has been appointed superintendent of dining car and hotel department of the Oregon-Washington Railroad & Navigation Company, with office at Portland, Ore., vice J. C. Morrison, assigned to other duties. Effective July 12.

R. B. White, superintendent of the Illinois division of the Baltimore & Ohio Southwestern, has been transferred to the Indiana division, with headquarters at Seymour, Ind., vice E. W. Scheer, promoted. M. H. Broughton, assistant superintendent at Cincinnati, Ohio, has been appointed superintendent of the Illinois division, with headquarters at Flora, Ill.

Victor V. Boatner, trainmaster of the Illinois Central, with office at Mattoon, Ill., has been promoted to superintendent of the New Orleans division of the Yazoo & Mississippi Valley, with headquarters at Vicksburg, Miss., vice Fred B. Oren, transferred to Mattoon as roadmaster of the Indiana division of the Illinois Central. Floyd R. Mays has been appointed trainmaster of the New Orleans division of the Yazoo & Mississippi Valley, with office at Wilson, La., vice J. B. Yellowly, transferred. Henry Fletcher has been appointed trainmaster of the

Vicksburg division, with office at Greenville, Miss., vice Floyd R. Mays, transferred. He will also continue to handle the duties of traveling engineer. Paul E. Odell has been appointed trainmaster of the Indiana division of the Illinois Central, vice V. C. Boatner, promoted, effective July 15.

The Virginia & Southwestern was leased on July 1, 1916, by the Southern Railway, and is now operated as the Appalachia division of the Middle district, with the following officers: C. E. Burchfield, superintendent; F. C. Simpson, master mechanic; J. W. Wampler, roadmaster—all with headquarters at Bristol, Va.-Tenn. The jurisdiction of general and district officers of the operating department of the Southern Railway has been extended over the Appalachia division.

J. S. Bergman, superintendent of the Norfolk division of the Southern Railway at Norfolk, Va., has been appointed assistant superintendent of the Winston-Salem division, with headquarters at Winston-Salem, N. C.; R. L. Avery, superintendent of terminals at Spencer, has been appointed superintendent of the Norfolk division, with headquarters at Norfolk, vice Mr. Bergman, and J. H. Rickmond has been appointed superintendent of terminals at Spencer, vice Mr. Avery.

Leonard B. Allen, whose appointment as general superintendent of the Central general division of the Chesapeake & Ohio, with headquarters at Huntington, W. Va., has been announced, was born on April 19, 1879, at Lexington, Ky. He was educated in the public schools of his native town, and graduated from the Kentucky State University in 1899 with the degree of civil engineer. Mr. Allen began railway work in June, 1899, as masonry inspector on the Southern Railway; in November of the same year he went to the Chesapeake & Ohio on an engineering corps, and has been in the continuous service of that road ever since. In 1903 he served in the construction department, and from 1903 to 1905 with the maintenance of way department of the same road. He was then appointed division engineer, Kentucky division, remaining in that position until 1910. From 1910 to 1913 he was engineer maintenance of way, and subsequently for a short time served as assistant chief engineer. In 1914 he was appointed superintendent of the Huntington and Big Sandy divisions at Huntington, which position he held at the time of his recent appointment as general superintendent of the Central general division of the same road, as above noted.

Edward Waldemar Scheer, recently appointed general superintendent of the Baltimore & Ohio Southwestern, with office at Cincinnati, Ohio, was born on April 28, 1875, at Zaleski, Ohio. He entered railway service on February 10, 1890, as a messenger in the office of the superintendent of the car department of the Cincinnati, Washington & Baltimore. From May 1, 1890, to December 15, 1895, he was employed as a clerk and stenographer on the Baltimore & Ohio Southwestern. From the latter date until January 1, 1899, he was chief clerk to the division superintendent, and then served as secretary to the vice-president and general manager until February 1, 1906. From 1906, to June 24, 1912, he was consecutively chief clerk to the general manager and assistant secretary and chief clerk to the general superintendent of the same road at Cincinnati, Ohio. From June 24, 1912, to June, 1913, he was assistant to the general superintendent of the Baltimore & Ohio Southwestern, and the Cincinnati, Hamilton & Dayton. He was superintendent of the Illinois division of the Baltimore & Ohio Southwestern, with headquarters at Flora, Ill., until June 1, 1915, when he was transferred to the Indiana division, with headquarters at Seymour, Ind. On July 10, 1916, he was appointed general superintendent of the Baltimore & Ohio Southwestern, with office at Cincinnati, Ohio.

E. W. Scheer

Traffic

C. E. Macy has been appointed manager of mail traffic of the Denver & Rio Grande, with headquarters at Denver, Colo.

W. S. Upshur having been assigned to other duties, the office of assistant general freight agent of the Chesapeake & Ohio and the Chesapeake & Ohio of Indiana at Richmond, Va., was abolished on July 1. R. A. Knightly has been appointed chief of tariff bureau, with office at Richmond, Va., effective July 15.

Edgar T. Willcox, whose appointment as general freight agent of the Seaboard Air Line, with office at Norfolk, Va., has been announced in these columns, was born on November 7, 1871, at Memphis, Tenn. He graduated from the high school at Memphis in 1888, and the same year began railway work as a mail clerk with the Texas & Pacific, at Dallas, Tex. From February, 1889 to September, 1892, he was a clerk in the auditor's office of the Louisville, New Orleans & Texas, now a part of the Yazoo & Mississippi Valley, and then to December, 1893, was rate clerk in the assistant general freight agent's office of the Kansas City, Memphis & Birmingham, now a part of the St. Louis & San Francisco. He served as chief clerk in the same office from 1893 to 1895, when he became soliciting freight agent and chief clerk of the same road at Birmingham, Ala. In September, 1896, he was made contracting freight agent and chief clerk at the same place, remaining in that position until 1901, when he was appointed commercial agent. From June, 1905, to July 1, 1907, he was division freight agent of the St. Louis & San Francisco at Birmingham, and from 1907 to 1911, he was assistant general freight agent of the same road at Memphis, Tenn. In September, 1911, he was appointed assistant general freight agent at St. Louis, Mo., and the following December he became assistant general freight agent of the Seaboard Air Line, at Birmingham, Ala., which position he held at the time of his recent appointment as general freight agent of the same road, as above noted.

E. T. Willcox

Engineering and Rolling Stock

Charles W. Extrand, locomotive engineer, St. Paul division, Northern Pacific, has been appointed acting road foreman of engines, with headquarters at Northtown, Minn.

H. Clewer, engineer of fuel economy of the Chicago, Rock Island & Pacific at Chicago, has been appointed master mechanic of the Missouri division, with office at Trenton, Mo., vice E. J. Harris resigned. Effective July 15.

Milton B. Morgan, assistant engineer maintenance of way of the Illinois Central and the Yazoo & Mississippi Valley, has been appointed district engineer of the Yazoo & Mississippi Valley, with office at Memphis, Tenn., vice Daniel W. Thrower, transferred. William G. Arn, roadmaster of the Indiana division of the Illinois Central, has been appointed assistant engineer maintenance of way of the Illinois Central, and Yazoo & Mississippi Valley, with office at Chicago, vice Mr. Morgan, promoted, effective July 15.

R. N. Kincaid, master mechanic of the Chicago & Eastern Illinois at Villa Grove, Ill., has resigned to become associated with the Buick Automobile Company at Flint, Mich. William R. Meeder, master mechanic at Danville, Ill., has been transferred to Villa Grove, in place of Mr. Kincaid. William F. Heiser, master mechanic at Evansville, Ind., has been trans-

ferred to Danville, Ill., vice Mr. Meeder. A. W. Standiford, general foreman at Salem, Ill., has been appointed master mechanic at Evansville, Ind., vice W. F. Heiser.

Gustave A. Haggander, whose appointment as bridge engineer of the Chicago, Burlington & Quincy, with headquarters at Chicago, has already been announced, in these columns was born at Sioux City, Iowa, on January 30, 1885. He graduated from the Armour Institute of Technology in 1907. Following graduation he entered the service of the Burlington as a draftsman, later being a concrete inspector and a designer until June 10, 1910, when he was made office engineer. From July, 1912, to July 1, 1916, he was assistant bridge engineer of the lines east of the Missouri river, with office at Chicago, Ill. As bridge engineer he will continue to have his headquarters at Chicago.

G. A. Haggander

E. J. Harris, master mechanic of the Chicago, Rock Island & Pacific at Trenton, Mo., has been appointed shop superintendent of the Denver & Rio Grande, with office at Salt Lake City, Utah, vice D. G. Cunningham resigned to accept service with another company.

Dan G. Cunningham, who has been appointed superintendent of motive power of the Denver & Salt Lake, with headquarters at Denver, Colo., as has already been announced in these columns, was born at Roanoke, Va., on April 19, 1873. Mr. Cunningham was educated in the public schools of his native city, and at the Virginia Polytechnic Institute, graduating from the latter institution in 1898. He entered railway service in 1890 as a machinist apprentice in the Roanoke shop of the Norfolk & Western. From 1898 to June, 1900, he was employed as a machinist in the same place. He then entered the service of the Atchison, Topeka & Santa Fe as general foreman at Needles, Cal., returning to the Norfolk & Western in 1904, as roundhouse foreman at Portsmouth, Ohio. From 1907 to March 10, 1912, he was general foreman of the same road at Williamson, W. Va. From March 20, 1912, to June 30, 1916, he was superintendent of shops of the Denver & Rio Grande at Salt Lake City, Utah. His appointment as superintendent of motive power of the Denver & Salt Lake was effective on July 1.

D. G. Cunningham

Daniel W. Thrower, district engineer of the Yazoo & Mississippi Valley, with office at Memphis, Tenn., has been appointed assistant valuation engineer of the Illinois Central and the Yazoo & Mississippi Valley, with headquarters at Chicago, Ill. Mr. Thrower first entered railway service in March, 1900, with the Yazoo & Mississippi Valley at Vicksburg, Miss. After holding the position of assistant engineer on various divisions of the Yazoo & Mississippi Valley and Illinois Central, he was roadmaster consecutively on the Iowa division of the Illinois Central, the Memphis division of the Yazoo & Mississippi Valley, and the Illinois division of the Illinois Central. For a few months in 1913 he was assistant engineer maintenance of way at Chicago, Ill., following which he went to Memphis as district engineer of the Yazoo & Mississippi Valley. On July 1, 1916, he was appointed assistant valuation engineer of the Illinois Central and the Yazoo & Mississippi Valley, with headquarters at Chicago, Ill.

Eliot Sumner, who has been appointed superintendent of motive power of the Pennsylvania Railroad, with headquarters at Williamsport, Pa., as has been announced in these columns, was born on October 18, 1873, at New Haven, Conn. He attended Yale University, and in 1896 entered the service of the Pennsylvania Railroad as an apprentice at the Altoona (Pa.) machine shop. In February, 1901, he was appointed inspector on the Philadelphia division, and the following October was made assistant master mechanic of the Middle and Western divisions. He was promoted in 1902 to assistant engineer of motive power on the Buffalo and Allegheny Valley division, and the following year was transferred to the office of the general superintendent of motive power. In 1907, he was appointed master mechanic on the Baltimore division, and in 1911, was transferred in the same capacity to the Williamsport division. On December 1, 1913, he was appointed master mechanic at the west Philadelphia shops, which position he held at the time of his recent appointment as superintendent of motive power of the same road at Williamsport, as above noted.

E. Sumner

Purchasing

R. H. Adams has been appointed assistant purchasing agent of the San Pedro, Los Angeles & Salt Lake.

O. V. McQuilkin, storekeeper of the Baltimore & Ohio at Glenwood, Pa., has been appointed district storekeeper, vice L. H. Tutwiler, transferred to the accounting department.

F. W. Wilson, road foreman of equipment of the Chicago, Rock Island & Pacific at Rock Island, Ill., has been appointed engineer of fuel economy, with office at Chicago, vice H. Clewer, promoted.

Isaac B. Thomas, who has been appointed assistant purchasing agent of the Pennsylvania Railroad, with office at Philadelphia, Pa., as has already been announced, was born on June 26, 1872, at West Chester, Pa., and was educated at Friends' High School and at Haverford grammar school. He graduated from Sheffield Scientific School, Yale University, in 1892, and later in the same year entered the service of the Pennsylvania Railroad as an apprentice at the Altoona (Pa.) shops. In August, 1897, he was appointed inspector of the same shops, and in April, 1899, became inspector in the office of the assistant engineer of motive power of the same road at Altoona. He was appointed assistant master mechanic at Renovo, Pa., in February, 1900, and in October, 1901, became assistant engineer of motive power at Altoona. He remained in that position until August, 1903, when he became master mechanic at Pittsburgh, and was transferred as master mechanic in February, 1906, to the Altoona machine shops. On May 1, 1911, he was promoted to superintendent of motive power of the Erie division (now the Central division) of the same road, and of the Northern Central at Williamsport, Pa., which position he held at the time of his recent appointment as assistant purchasing agent of the Pennsylvania Railroad, as above noted.

OBITUARY

A. O. Wellman, assistant treasurer of the Atchison, Topeka & Santa Fe, died at his home in Topeka, Kan., on July 10, following a stroke of apoplexy.

C. E. Andrews, superintendent of the Escanaba division of the Chicago & North Western, with headquarters at Escanaba, Mich., died at Garden City, Kan., on July 17.

Fred H. White, purchasing agent of the Duluth, Missabe & Northern, died on July 17, at Duluth, Minn., following a two weeks' illness after an operation for carbuncles.

R. S. Ruble, assistant general passenger agent of the Union Pacific, with headquarters at Denver, Colo., died at that city on July 15. His death followed an attack of heart failure.

James Hobart Moore, formerly a director of the Chicago, Rock Island & Pacific, and one of the group of financiers controlling that road, died on July 18 at Lake Geneva, Wis., at the age of 64.

Thomas E. Lewis, locomotive inspector of the Norfolk & Western, died on July 16, at the home of his brother, W. H. Lewis, superintendent of motive power of the same road, at Roanoke, Va. He was born on January 11, 1836, in Devonshire, England, and in 1857 entered the service of the New York Central as machinist and foreman at Syracuse, N. Y. He subsequently served as master mechanic on the Hannibal & St. Joseph, and on the Union Pacific. For three years from 1888 he was superintendent and master mechanic of the Kansas City Elevated Railway and then was master mechanic on the Kansas City, Wyandotte & Western. In 1898 he was appointed inspector of locomotives on the Norfolk & Western.

Don Juan Whittemore, consulting engineer of the Chicago, Milwaukee & St. Paul and for nearly 50 years its chief engineer, died at his home at Milwaukee, Wis., on July 16, at the age of 86 years. He was born at Milton, Vt., in 1830, and was educated at Bakersfield Academy in the same state. He entered railway service in 1847, in the engineering corps of the Vermont & Canada. In 1849 he was appointed assistant to the chief engineer in charge of the construction of the Vermont & Canada between Swanton, Vt., and Rouse's Point, N. Y. Upon the completion of this road he was appointed assistant engineer in charge of a division of the Great Western of Canada. In 1852 he left that road to become contractor's engineer in building the Central Ohio between Zanesville, Ohio, and Wheeling, W. Va. From July, 1853, to 1857, he was assistant to the chief engineer of the La Crosse & Milwaukee and from the latter date until 1860 was chief engineer and director of the Southern Minnesota. In the winter of 1860-1861, he was chief assistant engineer of the Ferrocarril Del Oeste in Cuba. He then reëntered the service of the La Crosse & Milwaukee as chief assistant to the chief engineer, and in 1863, when the La Crosse & Milwaukee was merged into the Chicago, Milwaukee & St. Paul, he was made chief engineer of the St. Paul, in which capacity he served actively until December 6, 1910, when he retired. Since 1910, he has continued to serve the St. Paul in a consulting capacity. He took an active interest in the affairs of the technical societies, having been president of the American Society of Civil Engineers in 1884.

D. J. Whittemore

Equipment and Supplies

LOCOMOTIVES

THE SUSQUEHANNA & NEW YORK is inquiring for several Consolidation locomotives.

THE NEVADA COPPER COMPANY is inquiring for several six-wheel switching locomotives.

THE CANADIAN NORTHERN has ordered one rotary snow plow with 12 ft. cut from the American Locomotive Company.

THE ITALIAN STATE RAILWAYS have issued inquiries to builders in this country for prices on a number of Consolidation locomotives.

THE BRADEN COPPER COMPANY, 165 Broadway, New York, owning mines in Chile, is inquiring for one 60-ton Shay locomotive.

THE NEW YORK CENTRAL is in the market for 5 Pacific type locomotives. It is understood that these engines will be bought for the Cleveland, Cincinnati, Chicago & St. Louis.

THE BANGOR & AROOSTOOK has ordered one superheater Consolidation locomotive from the American Locomotive Company. This locomotive will have 23 by 30-in. cylinders, 56-in. driving wheels and a total weight in working order of 208,000 lb.

THE TOGOLAND MILITARY RAILWAY, of Africa, has ordered 2 Mikado locomotives from the American Locomotive Company. These locomotives will have 15 by 20-in. cylinders, 38-in. driving wheels and a total weight in working order of 96,000 lb.

FREIGHT CARS

THE WESTERN PACIFIC has issued inquiries for prices on 1,000 fruit cars.

THE UNITED STATES GOVERNMENT is in the market for 50 armored cars.

THE DEPARTMENT OF THE INTERIOR has issued inquiries for 3 mine rescue cars.

PHELPS, DODGE & CO., New York, are in the market for a number of side dump cars.

THE MINNEAPOLIS & ST. LOUIS has issued inquiries for 500 to 1,000 40-ton wooden box cars.

THE MATTHEISSEN & HEGELER ZINC COMPANY, La Salle, Ill., is inquiring for underframes for 50 tank cars.

THE GASOLENE CORPORATION, New York, has ordered 50 tank cars from the German-American Car Company.

THE SOLVAY PROCESS COMPANY, Syracuse, N. Y., has ordered 15 gondola cars from the Pressed Steel Car Company.

THE GADSDEN CAR WORKS, Gadsden, Ga., is inquiring for 1,400 center constructions, 1,000 for box cars and 400 for furniture cars.

THE CHICAGO & NORTH WESTERN, reported in last week's issue as inquiring for 200 mine cars, has increased this inquiry to 600 cars.

THE ILLINOIS CENTRAL has withdrawn its inquiry for 500 steel underframe refrigerator cars, mentioned in the *Railway Age Gazette* of July 7.

THE UNITED STATES STEEL CORPORATION has divided an order for 448 cars for the Carnegie Steel Company among the Pressed Steel Car Company, the Standard Steel Car Company and the American Car & Foundry Company.

PASSENGER CARS

THE MISSISSIPPI RIVER & BONNE TERRE is inquiring for one 65-ft. baggage and mail cars, and 2 62-ft. steel coaches.

IRON AND STEEL

THE CANADIAN PACIFIC is reported in the market for 30,000 tons of rails.

THE FRENCH GOVERNMENT has issued inquiries for an additional 20,000 tons of rails.

THE ELGIN, JOLIET & EASTERN has ordered 117 tons of steel from the American Bridge Company for bridges at Joliet, Ill.

THE ILLINOIS CENTRAL has ordered 465 tons of steel from the American Bridge Company for track elevation bridges in Chicago.

THE SOUTHERN RAILWAY has ordered 500 tons of steel from the McClintic Marshall Company for a bridge over the James river.

THE CHICAGO & WESTERN INDIANA has ordered 219 tons of steel from the American Bridge Company for bridging for the 87th street railway, Chicago

THE PENNSYLVANIA RAILROAD has ordered 2,300 tons of bridge steel for 21 spans from the American Bridge Company and 1,200 tons for 17 spans from the Pennsylvania Steel Company.

THE NEW YORK PUBLIC SERVICE COMMISSION for the First District has awarded to the Pennsylvania Steel Company at $65,316 the contract for a supply of special work, including frogs, crossovers, switches, etc., for use on the new Seventh avenue subway in Manhattan.

MISCELLANEOUS

THE CHICAGO, BURLINGTON & QUINCY has ordered a coaling station, to be erected at Rochelle, Ill., from the Ogle Construction Company.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered two "RandS" measuring coal loaders for installation on its lines for recording locomotive coal.

THE VIRGINIAN has awarded a contract for the construction of a concrete coaling station at Whitethorne, Va., to the Ogle Construction Company. The building includes a toilet room and shower bath for employees.

THE PENNSYLVANIA RAILROAD has awarded a contract to the Roberts & Schaefer Company, Chicago, for the building of a 300-ton capacity, two-track, automatic electric counterbalanced bucket locomotive coaling station at Erie, Pa., and also for two "RandS" gravity sand plants, using the beamer patent steam sand dryer.

THE ILLINOIS CENTRAL has awarded a contract to the Roberts & Schaefer Company, Chicago, for the building at Effingham, Ill., of a large 600-ton capacity, 3-track, reinforced concrete locomotive coaling plant, using automatic electric elevating equipment and the new "RandS" silent traction hoist. It has also awarded contracts to the Ogle Construction Company, Chicago, for a 300-ton frame coaling station at Hart, Ill., and to the Railroad Water & Coal Handling Company, Chicago, for the erection of a 500-ton frame coal chute at Waterloo, Ia.

RAILWAY EXTENSION IN INDIA.—The following projects have recently been sanctioned by the Indian Railway Board: The construction of a branch metre-gage line from Katakhal, on the Assam-Bengal Railway, to Lalabazar, a distance of about 23 miles; of a branch on the 2-ft. 6-in. gage from Larkhana, on the North-Western Railway, to Jacobadad, via Kamber and Shahdadhot, a distance of about 75 miles; of a branch on the same gage from Khulua to Baginhat, a distance of about 20 miles; by the Hoshiarpur Doab Branch Railway, of an extension of the Phagwara Rahon 5-ft. 6-in. line from Nawashahr, to Jaijon, via Garhshanker, a distance of about 19 miles; a survey by the South Indian Railway has also been sanctioned for a line on the metre-gage between Arni, on the Villapuram Katpadi section of the South Indian Railway and Padalam or Madurantakam alternatively, a distance of 60 miles; and by the Madras & Southern Mahratta Railway for a light line on the metre-gage from Ollapalim to Kanigiti, via Singuray Akonda, on the Madras & Southern Mahratta Railway, a distance of about 45 miles.

Supply Trade News

A. S. Work, mechanical expert on the sales force of the Nathan Manufacturing Company, died on July 13, 1916, at the Illinois Central Hospital, Chicago, Ill., from the effects of an operation performed for a gastric ulcer of the stomach. Mr. Work had been connected with the Nathan Manufacturing Company for seven and a half years, and previously had a long experience as a practical railroad man, as fireman and engineer on the Panhandle division of the Pennsylvania, road foreman of engines of the New York, Chicago & St. Louis and road foreman of engines on the Chicago & Alton.

American Arch Company

J. T. Anthony, manager of the service department of the American Arch Company, New York, has been appointed assistant to the president and has been succeeded by R. J. Himmelright, hitherto assistant to the manager of the service department.

J. T. Anthony

Mr. Anthony has been in the employ of the American Arch Company since January, 1912. He was born in February, 1883. After completing a common and high school course, he entered the Georgia School of Technology, from which he graduated in 1902. He was then engaged in the textile manufacturing business for four years; but in 1906 entered railway service in the roadway department of the Atlantic Coast Line. He remained with that road until 1907, when he became a draftsman in the motive power department of the Central of Georgia. In January, 1912, he entered the employ of the American Arch Company as combustion engineer. In March, 1914, he was made assistant general eastern sales manager. A few months later he was made manager of the service department, in direct charge of traveling engineers and the supervising of all road work. It is this position he leaves to take up his new duties as assistant to the president.

R. J. Himmelright

R. J. Himmelright was born in Barberton, Ohio, in 1883. After completing the common and high school courses there, he took a summer course of two years at Kentucky State University. In 1904 he entered the employ of the Stirling Boiler Company. One year later he entered Purdue University, and graduated in the class of 1909 with the degree of mechanical engineer. He immediately entered the service of the Lake Shore & Michigan Southern as special apprentice; and after serving two years in this capacity was employed by the Locomotive Stoker Company as mechanical expert. This position he held until 1913,

when he entered the service of the American Arch Company as traveling engineer. In 1915 he was made assistant to the manager of the service department.

The St. Louis offices of the Westinghouse Air Brake Company and the Westinghouse Traction Brake Company, C. P. Cass, southwestern manager, have been removed from the Security building to Suite 1407-1415 Boatmen's Bank building, St. Louis, Mo.

The Central Trust Company of Illinois was appointed receiver for the Kennicott Company of Chicago, Ill., on July 12, following a petition of creditors. Chauncey J. Blair, the late president of the company, it is understood, was trying to float a bond issue for the purpose of obtaining more working capital at the time of his death last May. Further efforts to effect this purpose were unsuccessful.

M. D. Montgomery, acting manager of the Denver district of the Goodyear Tire & Rubber Company, has been appointed manager of that district. F. C. Moyer, manager of the Des Moines (Iowa) branch, has been appointed manager of the Minneapolis (Minn.) district, vice G. H. Barmore, who has been appointed manager at Milwaukee, Wis. F. W. Telford, supervisor of motor truck sales at Chicago, Ill., has been appointed manager of the Des Moines branch, vice F. C. Moyer. T. J. Fitzgerald has been appointed manager of the El Paso (Tex.) branch, left vacant by the death of G. F. Dennis.

TRADE PUBLICATIONS

SCALES.—The Standard Scale & Supply Company, Pittsburgh, Pa., in its recently issued price list No. A210, gives illustrations, brief descriptions and price lists of the line of Standard scales. The scales shown include a wide variety for many kinds of businesses and uses.

LOCOMOTIVE APPLIANCES.—The G. F. Cotter Supply Company, Houston, Tex., general sales agents for the Simplified Steam Chest Company of the same city, has issued a folder relative to the simplified piston valve steam chest for supplying slide valve locomotives with piston valves for use with superheated steam.

CAR WHEELS.—The Griffin Wheel Company has issued a seven-page booklet containing nine reasons why the chilled iron car wheel is preferable to other types of wheels, as follows: safety, low initial cost, low maintenance cost, guaranteed service, brake efficiency, saving in brake shoes, saving in rail wear, minimum of flange wear and liberal allowance for old wheels.

COAL UNLOADER.—The Roberts & Schaefer Company, Chicago, has issued Bulletin No. 31, which described the "RandS" measuring coal loader for locomotives, a device which automatically measures the coal as it is being discharged into the locomotive tenders. The operation of this device is explained in detail with ample illustrations. The pamphlet also contains a description, with illustrations, of the duplex 12-ft. shallow pit loader, a new arrangement of the substructure of coaling stations which will decrease the cost of foundations for any coaling station of the bucket type.

ON THE FIRING LINE WITH BATTERY BILL.—The story of W. Alkaline Battery, otherwise known as Battery Bill, has now been published in booklet form by Battery Bill's employer, the Edison Storage Battery Company, Orange, N. J. Battery Bill is already well known to readers of the advertising pages of the *Railway Age Gazette*. He is the enterprising salesman of Edison storage batteries whose adventures, detailed in the form of letters to his boss, center around his successful attempt to sell Edison batteries to the X. Y. Z. Railroad and to help the officers of that road answer the query of President X: "Why aren't we using Edison batteries?" These letters, both humorous and snappy, give the arguments he presented; the questions he answered; or, in other words, they give in a rather unique and most interesting manner the salient advantages of the Edison battery for railway service. There is also included a series of interesting illustrated lectures (which perhaps some of the readers of the *Daily Railway Age Gazette* "attended") given by Battery Bill before the M. C. B. and M. M. conventions at Atlantic City. The booklet contains 32 pages and is a bit above the regular run of catalogs from the standpoint of illustration, paper and printing.

Railway Construction

CHICAGO, MILWAUKEE & ST. PAUL.—This company is checking up surveys for the extension of its line from Grass Range, Mont., to Winnett, 20 miles, and expect to commence construction work soon.

FLORIDA ROADS (ELECTRIC).—According to press reports, capital has been secured, and work will be started soon on an interurban line from St. Petersburg, Fla., northeast to Tampa, about 18 miles. The plans include building a bridge over Old Tampa Bay. W. S. Gandy, St. Petersburg, is said to be interested.

FT. SMITH, SUBIACO & EASTERN.—This company will extend its line from Scranton, Logan County, Ark., to Dardanelle, a distance of about 15 miles. The work will be done by company's forces, and the contracts for rail and other material have already been let.

GREAT NORTHERN.—The Montana Eastern, which is a subsidiary of the Great Northern, has awarded a contract to A. Guthrie & Co., St. Paul, Minn., for the completion of the line from Lewistown, Mont., to Higgins, 25 miles. About one-half the line was completed in 1913.

ILLINOIS CENTRAL.—This company is constructing about 30,000 ft. of passing tracks at 13 points on the Minnesota division between Freeport, Ill., and Albert Lea, Minn.

LAKELAND, BARTOW & WINTERHAVEN INTERURBAN.—Application is to be made in Florida for a charter by this company, it is said, with $700,000 capital and headquarters at Winterhaven. The plans call for a line to connect Lakeland, Fla., with Bartow and Winterhaven. J. L. Wilson, president, Altoona, Pa.; E. B. Nelson, vice-president and general manager, Baltimore, Md.; A. X. Erickson, secretary, Lakeland, Fla.

MISSISSIPPI ROADS.—Plans are being made to build a line from Clarksdale, Miss., west to a point on the Mississippi river, also to build from Clarksdale southeast to Webb, in all about 35 miles. M. J. Bouldin is chairman of the City Railroad Commission, and L. W. Mashburn, engineer, Clarksdale.

NEW YORK SUBWAYS.—The New York Public Service Commission, First district, has received bids for the construction of the new two-track tube under the East river from Second avenue and Sixtieth street in the borough of Manhattan, to a connection with the new elevated lines in the borough of Queens, at Queensboro Bridge Plaza station. Patrick McGovern & Co., the lowest bidder, offered to do the work for $4,194,797. (June 30, p. 1609.)

OCKLAWAHA VALLEY.—According to press reports this company has under consideration the question of building an extension from the southern terminus at Ocala, Fla., via Umatilla, Eustis, Mount Dora and Tangerine, about 80 miles. The company now operates a 54-mile line from Palatka, Fla., southwest to Ocala.

PENNSYLVANIA LINES WEST.—This company will re-locate its line adjacent to the north bank of the Ohio river from a point a short distance east of Glen Osborne Station, Pa., through Sewickley and Edgeworth Boroughs to a point west of Shields Station, a distance of 2.7 miles. This will be a four-track line, and will involve about 550,000 cu. yd. of fill and 105,000 cu. yd. of cut. It will have a maximum curve of 1 deg. and 45 mm., and maximum grades of 0.112 per cent ascending east bound, and 0.10 per cent ascending west bound. There will be five undergrade street crossings and five passenger station subways, involving 13,000 cu. yd. of concrete and 18,000 sq. ft. of steel solid floor bridges. A new freight and passenger station layout will be constructed at Sewickley.

PORT BOLIVER IRON ORE.—This railway is locating a route for an extension from Big Cypress Bridge, three miles north of Ore City, Tex., to Avinger, a distance of 10 miles. The road will connect with the Missouri, Kansas & Texas at Avinger.

ST. LOUIS, IRON MOUNTAIN & SOUTHERN.—This company has

awarded a contract to the List & Gifford Construction Company, Kansas City, Mo., for from 60,000 to 80,000 cu. yd. of bank widening work between Dupo, Ill., and Roots, on the Illinois division, a distance of about 45 miles. The work has been sublet to the List & Bagwell Construction Company, which concern now has it under way.

SAVANNAH & ATLANTA.—See Savannah & Northwestern.

SAVANNAH & NORTHWESTERN.—Work has been finished on the extension, built under the name of the Savannah & Atlanta, from St. Clair, Ga., northwest to Camak, about 35 miles. (January 14, p. 85.)

SOUTH FLORIDA & GULF.—This company recently opened for operation a 20-mile section, it is said, from Halsey, Fla., to Prairie Ridge. The plans call for a line from Kenansville south via Bassenger. It is being built by the Southern Colonization Company to develop land owned by this company. The line may eventually be extended south to Lake Okeechobee.

SOUTHERN PACIFIC.—This company has completed grading work on a line from Hoover, Ore., southeasterly along the north fork of the Santiam river for a distance of 11 miles. It is not known when the line will be completed.

RAILWAY STRUCTURES

BERKLEY, PA.—A contract has been given to C. H. Reimard, Bloomsburg, Pa., by the Philadelphia & Reading for building two 25-ft. concrete arches over Willow creek, at Berkley.

COLUMBUS, OHIO.—The Cleveland, Cincinnati, Chicago & St. Louis has awarded a contract to the Walsh Construction Company, Davenport, Iowa, for the elimination of four grade crossings between First avenue and Seventeenth avenue. The project involves about 180,000 cu. yd. of embankment and 10,000 cu. yd. of concrete work. The tracks will be elevated an average of six feet, and the streets will be depressed. Four steel through girder bridges with solid floors will be erected.

MALDEN, MASS.—A subway is to be built under the tracks of the Boston & Maine at Malden station, it is said, at a cost of about $11,000.

MCGREGOR, IOWA.—The Chicago, Milwaukee & St. Paul has begun construction of extensive terminal facilities at McGregor.

NEW YORK.—The lowest bid was submitted by the Thomas J. Waters Company, at $22,649, to the New York Public Service Commission, for the construction of station finish for the Grand Central station of the Queensboro subway. The work includes lengthening the island platform of the present station in Forty-second street between Lexington and Third avenues. (June 30, p. 1609.)

Work has been started on a new pier at the foot of Jackson street for the Lehigh Valley to be known as Pier 44, East river. The new pier will be a two-story structure, 60 ft. wide and will have a frontage of 280 ft. on South street.

PINE VALLEY, N. J.—A contract has been given to Joseph B. Rowen, Moorestown, N. J., for building a passenger station for the Atlantic City Railroad at Pine Valley. It will be 12 ft. high, 17 ft. 4 in. wide and 32 ft. long, and will be of stucco on hollow tile construction, with green slate roof, brick base and concrete foundation.

ROCHESTER, N. Y.—The Lehigh Valley has given a contract to the Patterson-Moran Company, New York, for the masonry sub-structure, and to the Pennsylvania Steel Company, Steelton, Pa., for the steel superstructure of a bridge to be built over the barge canal, near Rochester.

WARSAW, N. Y.—Bids will be received by the Erie Railroad for a three-span bridge to be built over its tracks at Warsaw, at a cost of about $12,000.

WEST TULSA, OKLA.—The St. Louis & San Francisco will build a frame roundhouse at an estimated cost of about $26,000, and will construct a car repair shed and other buildings, which, together with a 100-ft. turntable and other mechanical facilities and yard tracks, will cost over $200,000.

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BOSTON & MAINE.—The executive committee has declared effective the plan for the extension to August 31, 1916, of the notes due July 17, 1916. Holders of more than 97 per cent of the notes have assented to the plan.

DALLAS UNION TERMINAL.—An additional issue of $807,000 bonds to pay for the completion of the Union passenger station at Dallas has been recommended by the engineer of the State Railroad Commission of Texas. This will make the total amount of bonds of the Dallas Union Terminal $5,000,000. The terminal will be used by the Atchison, Topeka & Santa Fe, the St. Louis Southwestern, the Texas & Pacific, the Chicago, Rock Island & Pacific, the St. Louis & San Francisco, the Houston & Texas Central, the Missouri, Kansas & Texas, and the Texas & New Orleans.

GEORGIA COAST & PIEDMONT.—Judge Speer, of the United States district court, has placed this road, which runs from Brunswick, Ga., to Collins, 100 miles, in the hands of B. C. Aiken, C. H. Levy and J. H. Bailey as receivers. The petition for receivership was made by a holder of $6,000 of the company's bonds.

LEHIGH VALLEY.—The New York Public Service Commission, Second district, has authorized this company to issue $1,100,000 5 per cent debenture bonds to be sold at not less than par, to reimburse the company for expenditures for additions and betterments.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—The directors have declared a semi-annual dividend of 3½ per cent. This makes the annual rate 7 per cent, which was the rate paid previous to 1915. In the fiscal year ended June 30, 1916, the annual rate was 5 per cent.

NORFOLK & WESTERN.—A press report from Roanoke, Va., says that the Norfolk & Western has bought the majority stock of the Virginia-Carolina Railway, which stock was formerly held by W. E. Mingea, of Abingdon, Va. The Virginia-Carolina Railway runs from Abingdon into Ashe County, North Carolina, and is 85 miles long.

PITTSBURGH & LAKE ERIE.—This company has filed amended articles of incorporation increasing its authorized stock from $30,000,000 to $50,000,000. If it is decided to sell additional stock it is understood that the shares will be offered for subscription by stockholders. The New York Central Railroad owns 51 per cent of the $30,000,000 Pittsburgh & Lake Erie stock now outstanding.

WEST JERSEY & SEASHORE.—The New Jersey Board of Public Utility Commissioners has approved the proposed issuance of $1,945,050 additional capital stock of the West Jersey & Seashore. This is equivalent to 20 per cent of the now outstanding stock, and the new stock is to be offered to stockholders at par.

DOG-WORKED RAILWAYS.—When the transport of supplies through the snow in the Vosges last year was of urgent importance, the French authorities conceived the idea of using dog-drawn sleighs, and several hundred trained animals from Alaska, Northwestern Canada and Labrador were obtained. With the end of the snow the dogs continue to be found useful. They are now being harnessed to small 2-ft. gage light railways which run everywhere behind the front, and they are very capable. Eleven dogs with a couple of men can haul a load of a ton up some of the most precipitous slopes in the mountains, and two teams of seven dogs each can do the work of five horses in this difficult country with a very great economy of men. Of the three breeds in service the best is the Alaskan. His courage never fails, and he will work until he drops though he is perhaps the weakest of them all. Their chest development so necessary for hauling is remarkable. They are mainly fed on rice, horse flesh and waste military biscuits.